



User's Guide: Aug 05, 2010

Additional information online at:
<http://support.nextengine.com>



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Chapter 1

What's New...

1.1 ScanStudio HD 1.3

1.2 MultiDrive

Setup

MULTIDRIVE SETUP

-Here are the items that are included with the MultiDrive



Allen wrench and



L Bracket



AutoPostioner

-**Attach** the L Bracket to the MultiDrive with two flat head screws and allen wrench



-**Attach** the MultiDrive to the bottom of the scanner and **fasten** a screw underneath the scanner for additional stability





-**Plug** in the MultiDrive to the scanner



-**Start** ScanStudioHD and proceed to Calibration

Calibration

CALIBRATING THE MULTIDRIVE



Starting first scan with MultiDrive

-**"Start"** to begin the automated calibration process (We suggesting using the palm tree included with the MultiDrive)

-**"Skip"** if you wish to proceed to the scan panel and choose

-**"Learn More"** to be directed to this help page.



You can

-This function is available for re-calibration when alignment results in an error or when the MultiDrive was detached and is reattached.

Scan Process

SCANNING PROCESS



After calibration is

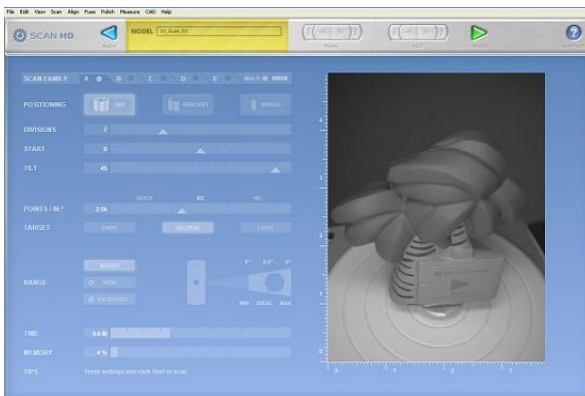
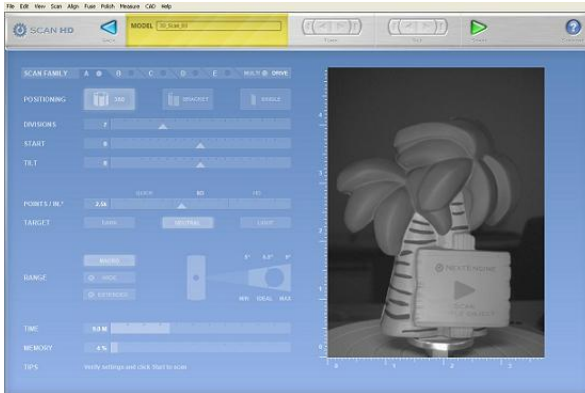


A new scan panel will be loaded when

- Five families are now available for predefined settings for Positioning, Divisions, Start Angle, Tilt Angle, Points/IN² and Target
- Clicking on the family name will enable the tab to edit the settings.
- To enable or disable a family, simply check or uncheck the circle next to the family name.
- Starting positions can be set for both the initial and tilt axis by moving the slider bar arrow.
- The start axis has the full 360 rotation and tilt axis is bounded to -35 to 45 degrees.
- Use the top slider bars to visually set the starting and tilt positions. (This will update the settings for the scan family)



-Select the scan settings for each tab and check the tabs you want to have scan.
If the setting for a tab have been adjusted, but the tab is not checked it will not scan.



- All MultiDrive scans are to be in MACRO mode.
- Select a ROI for your model to prevent the MultiDrive from being scanned in for certain tilt angles.
- If additional scans are needed, enter scan panel and position the model by using different starting and tilt angles to capture additional scans.
- If you physically adjust the part, then a 3 pin alignment will be needed to align.
- When finished, trim unnecessary data and "Fuse" or "Volume Merge" the model for export: ->

Troubleshooting

ADDITIONAL TIPS AND TOOLS

Warning

- Do not use the AutoDrive PartGripper with the MultiDrive as the length of the pole will cause it to hit the scanner when the MultiDrive is positioned at certain angles.

Switching between AutoDrive and MultiDrive

- Simply plug in an AutoDrive to display the proper UI.
- When reattaching the MultiDrive, make sure to recalibrate as needed.

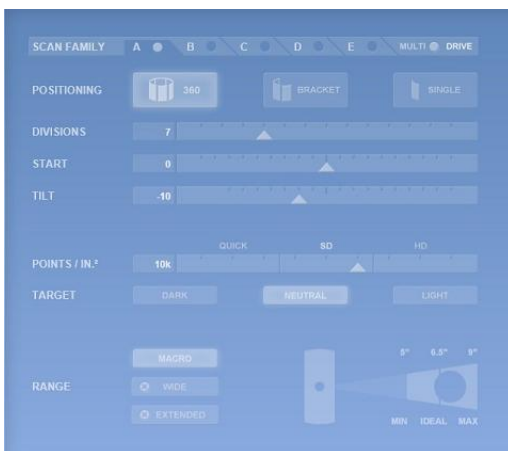
- When more than 5 Scan families are required, then just click on scan to enter the scan panel, and you can add 5 more new sessions. These scans should auto align to the previous scans assuming all the movement and rotations were done by the turntable. If they don't auto-align , just drag the scans into the green and refine (no pins required)

- Force Calibration. If your scans are not coming in aligned, you may need to run a force calibration. You can do this from the drop down menu , Align, then go down to Calibrate MultiDrive

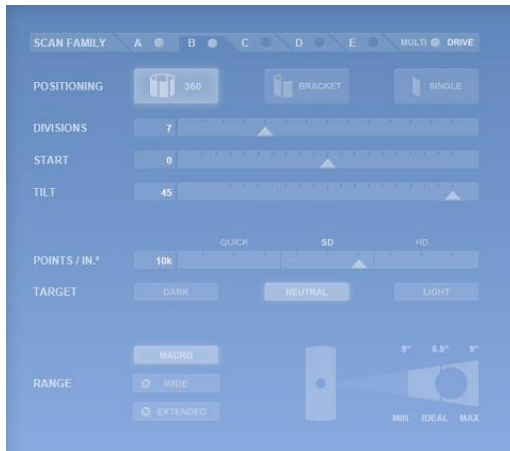
Dental

DENTAL

Recommended Scan Settings for Dental Cast Models



Family A Divisions: 6 Tilt: -10



Family B Divisions: 6 Tilt: 45 degrees

-Use the HD speed for higher resolution

Chapter 2

Installation

2.1 System Requirements

PC

The 3D Scanner HD is a high resolution device, and quickly captures many millions of points and pixels. A powerful PC is key for being able to visualize and take full advantage of this data.

Minimum:	Windows XP / Vista / Windows 7	2 GHz Dual-core	3 GB RAM	256 MB Graphics	USB 2.0									
Recommended:	Windows XP 64 / Windows 7 64-Bit	2.5 GHz Dual-core	4 GB RAM	512 MB Graphics	Powered USB 2.0 Hub									
Operating System	CPU	RAM	Graphics	3D Points: 1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	12M
32 Bit	Dual-core, 2 GHz	3 GB	256 MB	<div><div>1 M</div></div>										
64 Bit	Dual-core, 2.5 GHz	4 GB	512 MB	<div><div>4M</div></div>										
64 Bit	Quad-core, 2.8 GHz	8 GB	1 GB	<div><div>6M</div></div>										

Note:

If you are going to be scanning large or complex models, we highly recommend running a 64bit OS and upgrading your RAM to at least 4 GB.

For a fast viewing experience, a good graphics card is essential. In our testing we've found that not all GPU's are optimized for dealing with lots of points and pixels.

Quick tip for a new Graphics Card: The latest and greatest is the nVidia GeForce GTS/GTX series. They are well priced and can handle large amounts of scan data smoothly. The GeForce GTS/GTX series is available on Newegg with a price range of \$115 to \$300.

High-end systems need sufficient power to run properly. If you are seeing errors in ScanStudio HD, it maybe related to an under specified power supply. A 600+ watt power supply is recommended to run high-end systems like those with Intel Core i7 processors.

If you have questions about your system configuration, we'd be happy to help. Please note the SD scanner is only compatible with Windows XP and Vista when you are running as the administrator. All software developed after ScanStudio CORE is only for HD scanners. If you would like to upgrade your SD scanner please contact NextEngine at info@nextengine.com.

Please click "Ask?" to talk to us about it.

USB

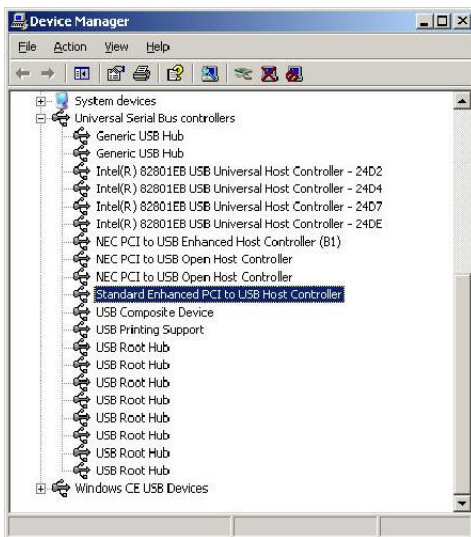
The scanner requires a USB 2.0 connection.

Here's how to check if you have USB 2.0 support, which is required to run the Desktop 3D Scanner.

- Right-click My Computer
- Click on Properties
- Click on the Hardware tab
- Click on the device Manager button



- Scroll down as needed until you see Universal Serial Bus Controllers
- Expand that by clicking on the boxed plus sign in front of Universal Serial Bus Controllers



If it says "Standard Enhanced PCI to USB Host Controller" it is 2.0. If it does not say "Enhanced" it's USB 1.0.

PC Buying Guide

It's now possible to purchase a PC with great scanning, CAD, and graphics performance for under \$1000.

We've found that the best combo in terms of price / performance is to assemble the computer from scratch, purchasing individual parts. For a ready made PC, options such as Dell and HP will let you choose individual components to meet your needs.

Some tips are provided below for finding the best deals (as of November 2009). We don't have a relationship with any of these vendors, but this is how we buy most of our test hardware.

Go to Newegg.com and check out their latest deals.

Look for a Intel Core2 Quad Processor. These are the some of the best processors currently available,

and are dropping in price significantly.

Intel Core2 Quad Q9400 - 2.66GHz 6MB L2 Cache - LGA 775 95W

Price: \$190

<http://www.newegg.com/Product/Product.aspx?Item=N82E16819115131>

Upgrading the RAM:

For stable performance when capturing complete models, 4 GB of RAM is recommended. One example:

4 GB DDR2 PC2-8500 RAM

Price: \$89

http://www.newegg.com/Product/Product.aspx?Item=N82E16820231166&cm_sp=DailyDeal-_-20-231-166-_-Product

Upgrading the Graphics Card:

We've found that the nVidia GeForce GTS/GTX series are well priced and can handle large amounts of scan data. We've also found that SolidWorks and other CAD programs work quite well with these cards. Here's a well priced sample from Newegg.com

nVidia GeForce GTS 250 - 1GB of RAM

Price: \$150

<http://www.newegg.com/Product/Product.aspx?Item=N82E16814150439>

****Make sure to download the latest driver for your Operating System****

The ATI FireGL cards are also recommended. They have great price/performance. We do not typically recommend purchasing a nVidia Quadro for this application. This is because only the high-end Quadro models have sufficient processing power to handle large numbers of 3D vertices.

Supported Operating Systems

ScanStudio HD 1.2 runs on Windows x64 operating systems, including the new Windows 7 x64.

ScanStudio HD 1.2 offers a full 64 bit application.

ScanStudio CORE with the SD scanner is only compatible with Windows XP, Vista (with administrator rights) as well as Windows 7 32/64-bit under special installation instructions.

Installation instructions for ScanStudio CORE with Windows 7 32 and 64-bit can be found here:

32-bit: ->

64-bit: ->

2.2 Software Installation

Download

Please uninstall 1.7.3 before installing ScanStudio HD.

- Go the ScanStudio Quick Start Page at <http://www.nextengine.com/start>

Link to the Download for ScanStudio HD 1.2.1 ->

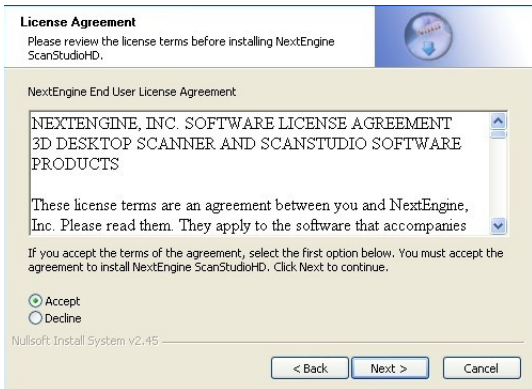
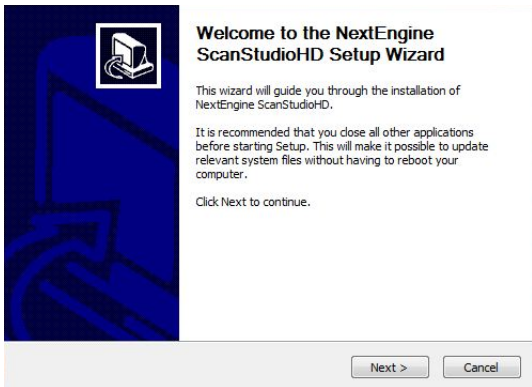


Enter your e-mail address and password

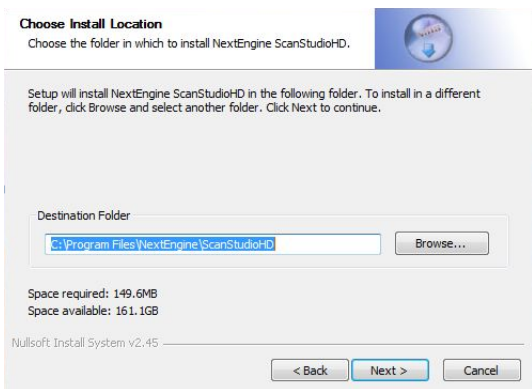
- You can find your username and password in the order confirmation e-mail. If you need your account information please e-mail info@nextengine.com

- Choose to SAVE the file.

After download is complete, double click the installer file to start Installation.



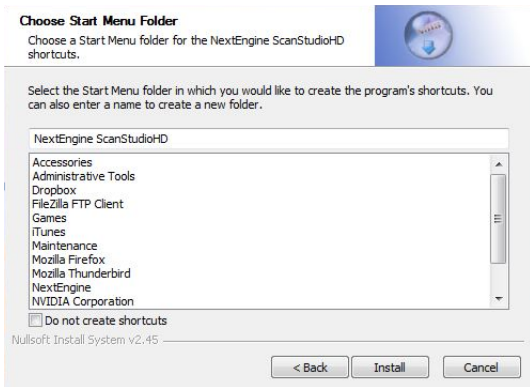
Accept the License Agreement and click



It is recommended to install in the



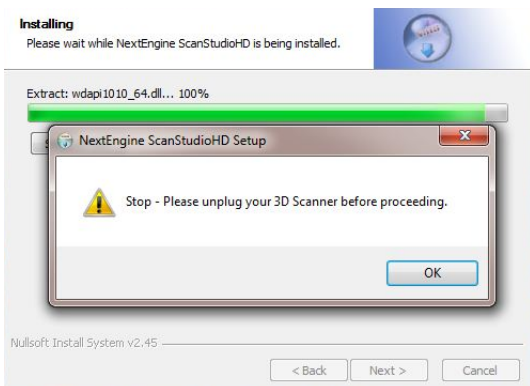
Every box should be checked and then



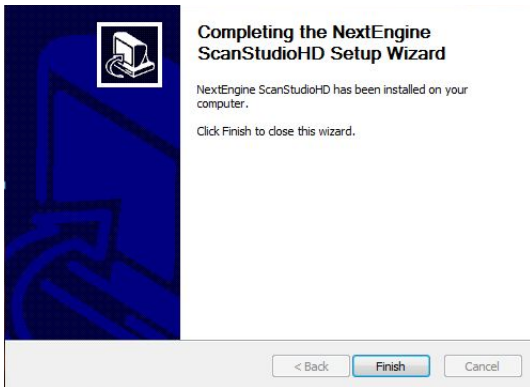
Click to Install the Software



The latest version of .net is required to



Make sure the scanner is unplugged



Once Installation is complete click

- For an SD scanner and ScanStudio 1.7.3 you will need to be logged in as an administrator to install and run the software. For HD scanners running HD 1.1.0 and newer you are required to install as an administrator, but do not need administrator privileges on the computer to run the software.

Connect

- Connect the scanner to the computer's USB port



- For XP and Vista a window will appear alerting you that new hardware has been detected.



Select option to Install the software



When the wizard has completed the

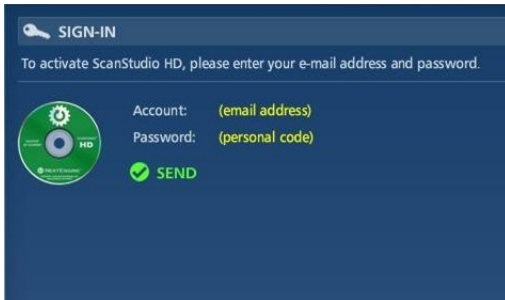
- For Windows 7 the drivers should automatically install once you plug in the scanner.



The scan arrow

Online

If you are connected to the internet activation is very simple.

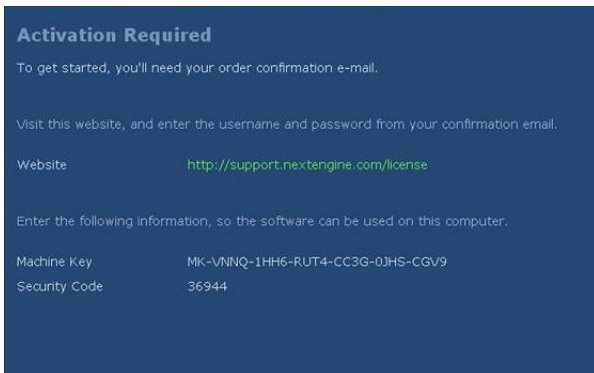


You will be asked to sign-in the first

- If your computer is connected to the internet it should automatically detect your computer and validate your ScanStudio license.
- Go to Help, About ScanStudio to see which version of ScanStudio you are running
- Click on Support and go to My Software to see your license status.

Offline

You do not need an Internet connection to use ScanStudio.



If your computer is offline you will see this

- Please go to this link <http://support.nextengine.com/license/setup>.

License Setup

Complete the form below, and a license will be e-mailed to you within 1-2 minutes.

Please specify your e-mail address and password (from your order confirmation e-mail).

Registered User (email address)

Password (personal code)

Please enter the machine information (from ScanStudio or RapidWorks).

Machine Key MIK-VNNQ-1HH6-RUT4-CC3G-0JHS-CGV

Security Code 36944

If you are running ScanStudio 1.5.2 or earlier, you may be asked to enter this number.

Disk Serial (serial)

[GET LICENSE](#)

Enter in the requested machine information

Thank You.

An email with your license is being sent to:
scanstudio@nextengine.com

You can also download your license file: [Download Now](#)

Installation Instructions

1. Save the license file to your desktop.
2. Close all NextEngine applications.
3. Double click on the license file to activate your software.

Your license will be e-mailed to

- Transfer the license file to your offline computer via a USB drive.
- Save the license file on your computer.
- Click the license file to launch ScanStudio.

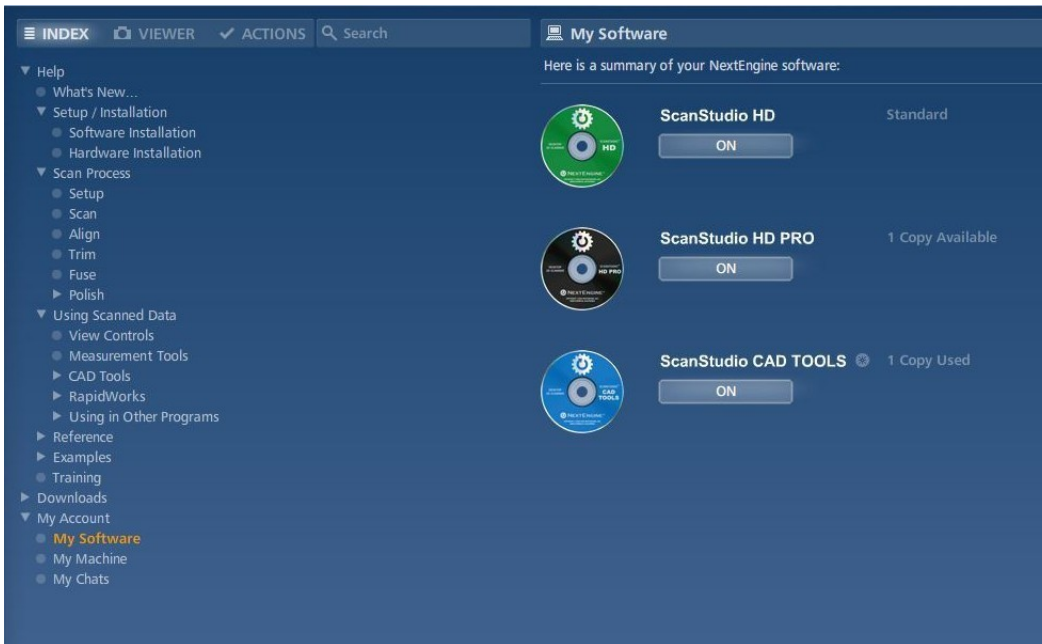
License

ScanStudio Core or HD Licensing:

- Core or HD can be installed on multiple computers.
- If your scanner says HD on the front you will want to run HD, if not run Core.

ScanStudio CAD Tools and HD Pro Licensing:

- CAD Tools and HD PRO are assigned to a single username and can only be used on one computer per license.



To activate, click where it says OFF and then it will say Activating followed by

License Transfer Procedure

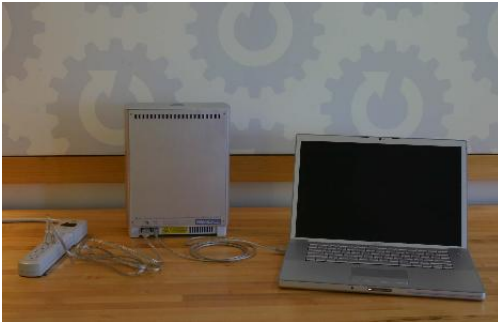
- Click on Support inside of the application.
- Go to My Software
- You need to turn the software OFF on the old computer before activating it on a new machine.

*If you have a question about your license please click ASK and someone from technical support will help you.

2.3 Hardware Installation

Scanner

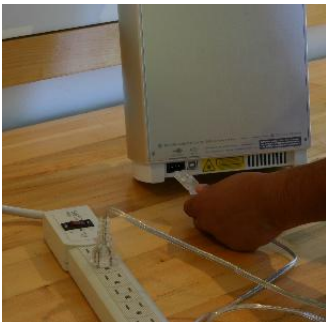
Installing the Scanner:



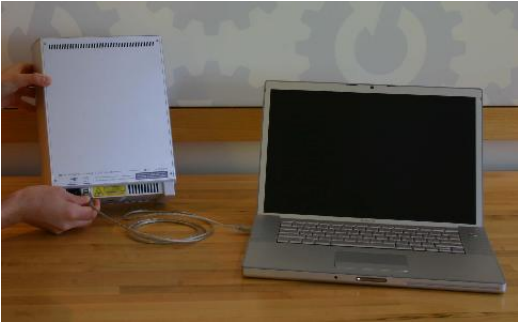
- Get your USB and power cords out of box



- Plug power cord into outlet and back of scanner



- Plug USB cord into back of scanner and computer USB port



Note: USB 2.0 is required to handle the large volume of 3D data and images.

AutoDrive

Setting up the AutoDrive and PartGripper:

AutoDrive



PartGripper



- Screw PartGripper into one of four corner sockets on AutoPositioner



- Tighten Platter on PartGripper



- Rotate Post clockwise (about 6 turns) to tighten PartGripper into AutoDrive



Tripod

Scanner and Tripod



There is a screw hole on the bottom of the scanner for attaching the scanner to a tripod



Next Step: Download and install ScanStudio -> or if already installed start your first scan

2.4 Customizing ScanStudio HD

File Management

-Each new scan is named 3D_Scan_## where the ## gets incremented to ensure a unique filename for each new scan.

-When you capture the first scan in a model, you can specify the filename by entering it in the yellow status area in top bar of the Scan Setup Panel:



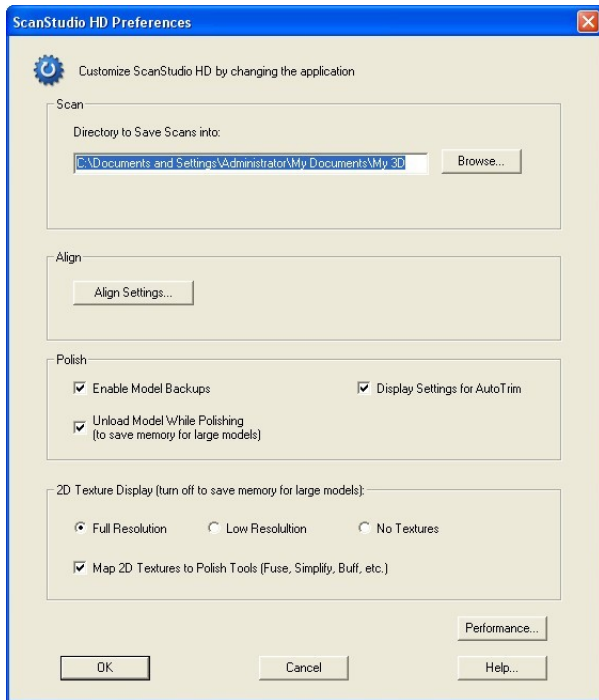
-A new folder will be created in your scan results directory with the specified name. Your SCN and JPEG files will be saved into that folder as the scan is captured.

-When you do a File-Save As, ScanStudio will save all of the needed files (SCN, JPEGs, etc.) into the directory you select, so you should be able to delete the 3D_Scan_## directory once you've done a File-Save As.

-File-Save should save your current SCN file wherever it resides, so it should save into the 3D_Scan_## directory unless you have performed a SaveAs or named the model at scan time, at which point it would save into your specified directory.

Preferences

-The Application Preferences Dialog is available from the Edit-Preferences menu and can be used to customize ScanStudio to fit your usage



Scan

- By default, the scan save directory is located under your My Documents\My 3D folder under your username.
- You can customize the directory after installation

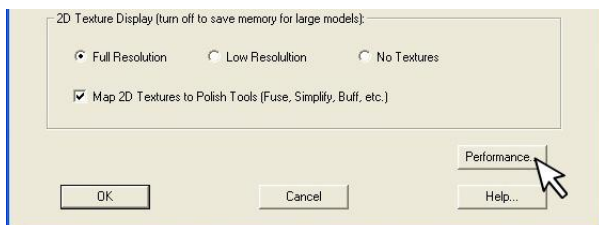
Polish

- Turn On/Off Model Backups which can be used to undo changes and restore from corrupted files
- Optionally display a settings dialog as part of AutoTrim
- Turn On/Off the unloading of models while Polish to help save memory

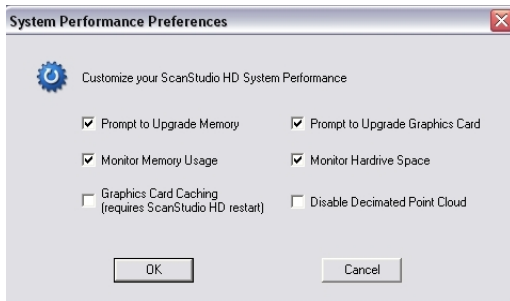
2D Texture Display

- Enable/disable texture loading and display (can be disabled to save memory).
- If it is disabled your model will only be displayed in solid mode.

Performance



Click on Performance to select additional



Prompt to Upgrade Memory

-Optionally check your system for the minimum RAM needed to run ScanStudio (a warning is displayed at application startup if your system does not meet the 2GB min. requirements)

Prompt to Upgrade Graphics Card

-Optionally check your graphics card and warn if it is not compatible with ScanStudio (a warning is displayed at application startup if your graphics card is not supported).

Enable/disable graphics card caching for higher rendering performance.

Monitor Hardrive Space

-Optionally monitor your free hardrive space and warn if your system is running low.

Monitor Memory Usage

-Optionally monitor the amount of available memory (RAM) and warn if your system is running low.

Graphics Card Caching

-Enable/Disable graphics card caching.

-If you have an ATI graphics card and experience USB issue you will want to turn this off.

-If you are working with large models and are having a slow response moving the model on the screen you will want to enable this.

Disable Decimated Point Cloud

- By default the decimated point cloud display is enabled.

- It will intelligently reduced the point cloud for accelerated responsiveness.

- You can disable this display option here.

Chapter 3

Getting Started

3.1 Setup

Surface Prep

Prepare dark, shiny or transparent objects using included tools to help the lasers capture the data.



Paint Pens: Washes off most



Powder: Talc

Testing has also shown that a spray powder like **Magnaflux Spotcheck SKD-S2 Developer** works well for prepping objects prior to scanning.

Here is a link to the site where you can purchase. **[Magnaflux Buy Page](#)**



Magnaflux Spotcheck

Other spray alternatives such as foot powder spray or white hairspray can be used as well:



Foot powder spray from

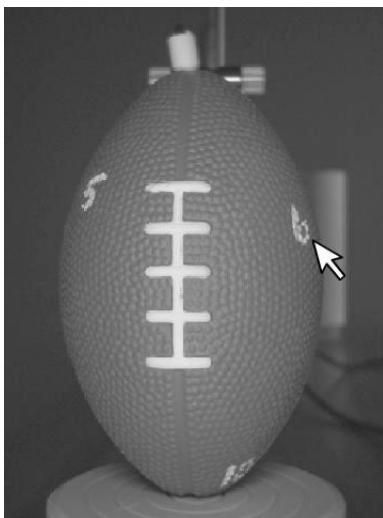


White Hairspray

White Hairspray Buy Page

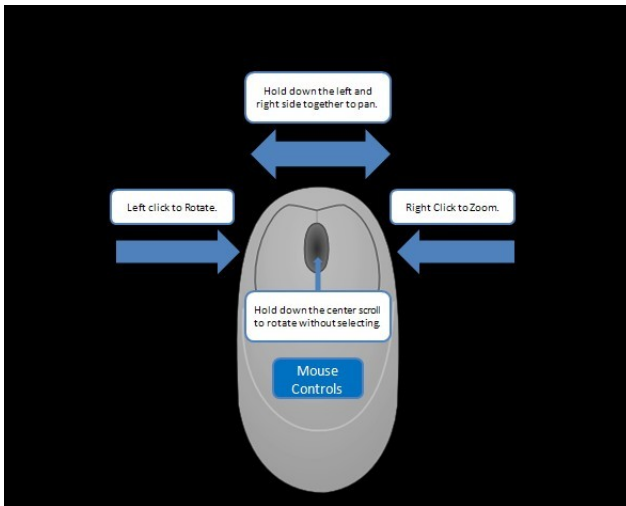
Alignment Prep

It may be helpful prior to scanning to make alignment marks using the alignment pen. These marks will make it easier to place pins and identify locations on the object. Alternatively, the 3D geometry that the Scanner captures can be used to align scans.



3.2 Controls

Mouse Controls



- Right click to zoom.
- Left click to rotate the model.
- Hold down the left and right buttons together to pan.
- Use the center scroll button to pan without selecting an area during trim.

Starting and Stopping

- Click the Start button to run the scan



- Click the Stop button to stop the scan



NextWiki Support Center

The SUPPORT button will take you to the NextWiki Support Center.



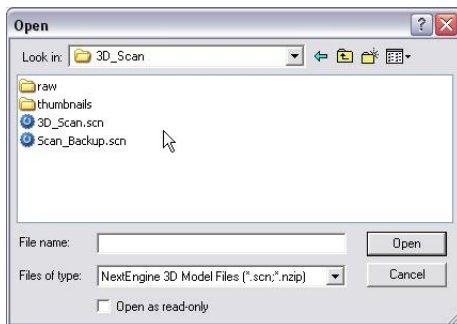
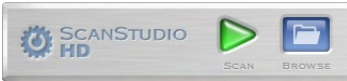
Click on

Browsing

- Click on the Close button to close a scan before starting a new project



- Click on the Browse button to open a previously saved scan



3.3 Scan

Intro

- Enter the Scan Panel by clicking the Scan button



- Customize your scan name in the yellow toolbar



There are 3 main types of scans:



360:

- Select the "360" scan option in the scan panel to scan the object from every angle.
- The number of divisions will control the degree of rotation between scans and the total number of scans
- The individual scans will be grouped as a family.

Bracket:

- Select "bracket" scan in the scan panel to scan three consecutive angles.
- The current viewpoint will be the center scan, with an offset scan to both the left and right of the current view
- The number of divisions will control the degree of rotation between the left and right offset scans from the center scan.
- The three scans will be grouped as a family. More on Scans and Families

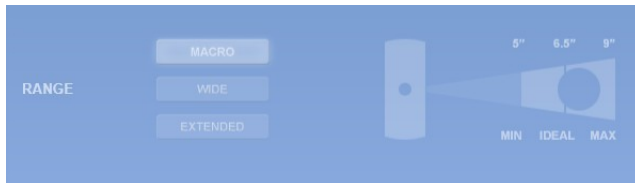
Single:

- Single scan of the object from one angle.

Speed

Precision:

Choose MACRO or WIDE distance based on object size and desired resolution



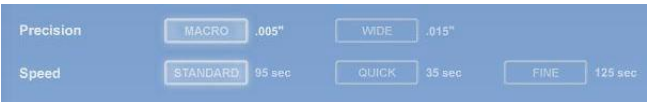
Macro = 0.005" accuracy, 3x5" field of view
 - Place object 6.5 inches from the front of the scanner

Wide = 0.015" accuracy, 10x13" field of view
 - Place object 17 inches from the front of the scanner

Extended = 0.015"+ accuracy, 16x22" field of view
 - Available with HD PRO
 - Objects can be placed up to 30" from the face of the scanner

Speed:

ScanStudio CORE
 Choose Standard, Quick or Fine scan speed based on desired scan time and quality



ScanStudio HD/HD PRO



Speed		Decimation			
		HD		HD PRO	
		Points/IN²	Triangle Size	Points/IN²	Triangle Size
1	HD	40k(2x)	0.0050"	160k (1x)	0.0025"
2		17k(3x)	0.0075"	40k (2x)	0.0050"
3		10k(4x)	0.0100"	17k (3x)	0.0075"
4	SD	4.4k(3x)	0.0150"	10k (2x)	0.0100"
5		2.5k(4x)	0.0200"	4.4k (3x)	0.0150"
6		1.6k(5x)	0.0250"	2.5k (4x)	0.0200"
7	Quick	1.1k(4x)	0.0300"	2.0k (3x)	0.0225"
8		700(5x)	0.0375"	1.1k (4x)	0.0300"
9		500(6x)	0.0450"	700 (5x)	0.0375"

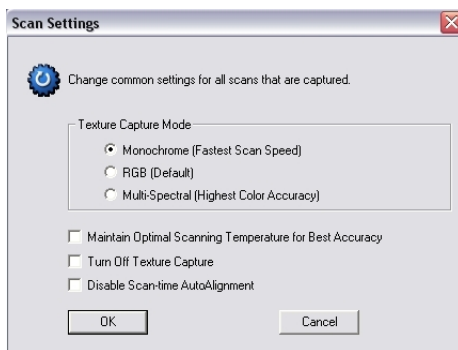
Macro Reference Table

Speed		Decimation			
		HD		HD PRO	
		Points/IN ²	Triangle Size	Points/IN ²	Triangle Size
1	HD	4.4k(2x)	0.0150"	17k (1x)	0.0075"
2		2.0k(3x)	0.0225"	4.4k (2x)	0.0150"
3		1.1k(4x)	0.0030"	2.0k (3x)	0.0225"
4	SD	500(3x)	0.0450"	1.1k (2x)	0.0300"
5		280(4x)	0.0600"	500 (3x)	0.0450"
6		180(5x)	0.0750"	280 (4x)	0.0600"
7	Quick	125(4x)	0.0900"	220 (3x)	0.0675"
8		80(5x)	0.1125"	125 (4x)	0.0900"
9		55(6x)	0.1350"	80 (5x)	0.1125"

Wide/Extended Reference Table

Tips

- For ScanStudioHD, go to Scan -> Settings -> Texture Capture Mode - and choose Monochrome or No Texture Capture for faster scan speed.



- Choose Fine or HD Speed for the greatest resolution.
- Choose Quick Speed to capture data the quickest with lowest resolution (not recommended for most parts).
- Calibration will occur for every scan family (AutoDrive and MultiDrive) by default, but can be disabled by checking the box for "Disable Scan-time AutoAlignment"

Position

- Orient object in viewfinder using Rotate buttons

Turn/Step Arrows:



- One click on a Turn Arrow rotates the AutoDrive a single increment for more precise positioning.
- One click on a Step Arrow rotates the AutoDrive one division.
- For example, if the divisions is set at 4, clicking on the step button will rotate the object 90 degrees.
- The left arrow rotates the object clockwise.
- The right arrow rotates the object counterclockwise

Note: The AutoPositioner should only be rotated using the Rotate Arrows and should not be done manually.

Region of Interest

- Drag the cursor around the object to select a smaller scan area

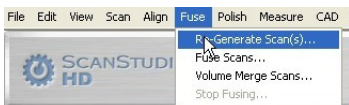


Regenerate

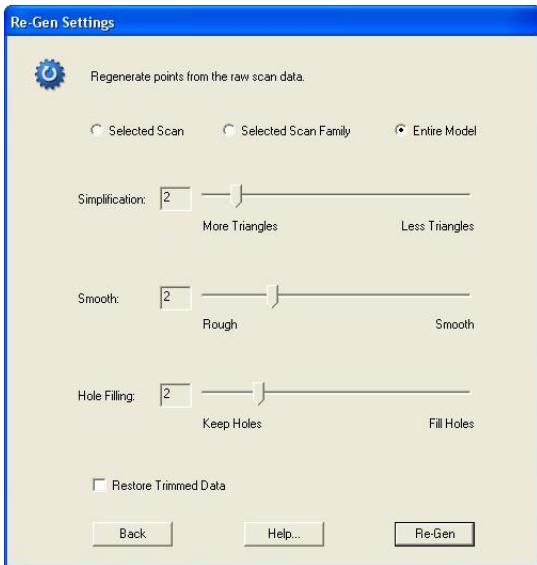
- Since the raw scan data is saved at scan-time, you can regenerate the points at any time with different point-generation settings.
- These settings have the same effect as the sliders on the scan setup screen.
- Re-Gen is particularly useful for changing the decimation value after a scan has been completed.

Steps:

- Click on Fuse, Re-Generate Scan(s)



- Select new scan settings for reprocessing



- Restore Trimmed Data: Choose this option to restore the trimmed data from either a single scan, family or the entire model.

Next Step: Remove unwanted areas such as the PartGripper using Trim or Align your scans to make a complete model -> . For tips on viewing your scan ->

- If you have any further questions, please click on the Ask? button.

3.4 Align

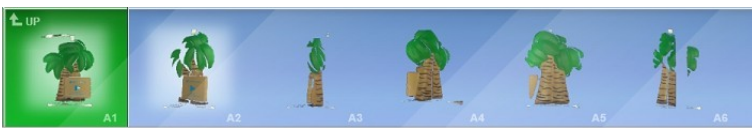
Intro

Note:

- Prior to scanning, it may be helpful to make alignment marks using the alignment pen.
- These marks will make it easier to place pins and identify locations on the object.
- For the Palm Tree image below, the markings on the model can be used for our reference points.

Selecting Scans to Align

- Double click on thumbnail of a family to separate the family into individual scans

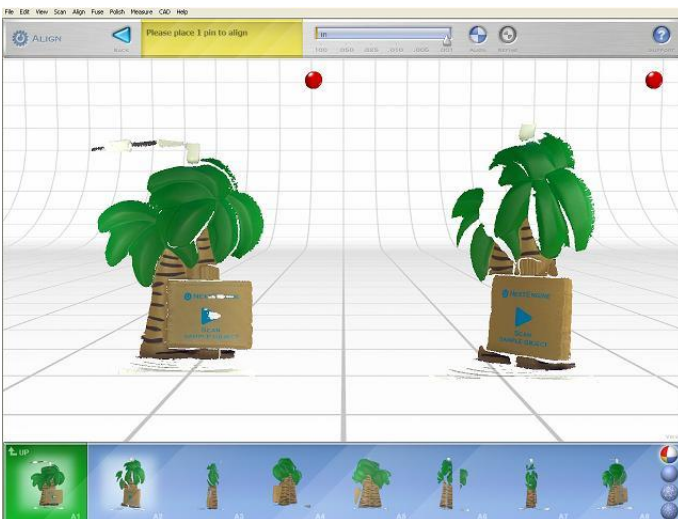


Alignment Screen



Click on Align to enter

- When you enter Alignment, you'll see a split screen view
- The left side shows an assembly of scans/families that are already aligned
- The right side shows the next piece that you're attaching to that assembly



Thumbnail Bar

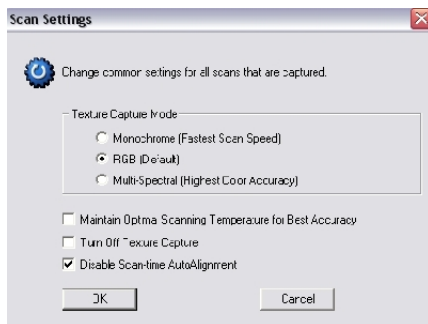


- The green side contains scans and families that are already assembled
- The blue side is for pieces that aren't part of the assembly yet
- To break apart or assemble your model, simply drag parts from one side to the other

Single Family

AutoAlign

- By default AutoAlignment is enabled and will run for all 360 and bracket scans.
- To disable AutoAlignment go to Scan ->Settings.



- If AutoAlignment does not result in an accurate alignment, the standard Align tool can be used to place correspondence points and align the scans.

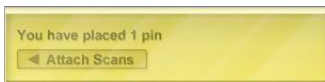
Alignment for 360 or Bracket Scans

- Place 1 pin on a common location between 2 scans within the family.
- Drag the pin to the location or double click on the point to place the pin.



Attach Scans

- The yellow status bar will walk you through the process
- Click "Attach Scans" to add your scan to the assembly



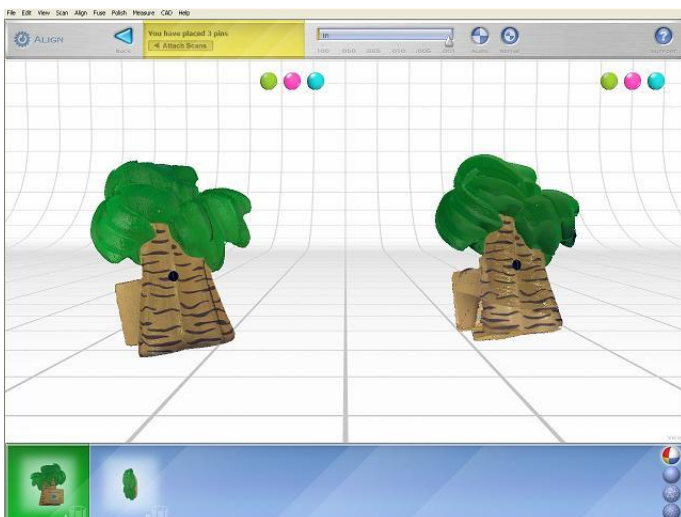
- Click File > Save after each alignment in order to save pin locations
- You can detach a scan by dragging it from the green to the blue and then you can adjust the pin.

MultiFamily

- Multiple families can be aligned together.
- Place 3 pins on common locations between the 2 families



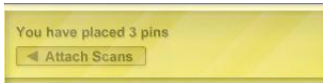
Two pins placed in front



Third pin placed in back

Attach Scans

- The yellow status bar will walk you through the process
- Click "Attach Scans" to add your scan to the assembly

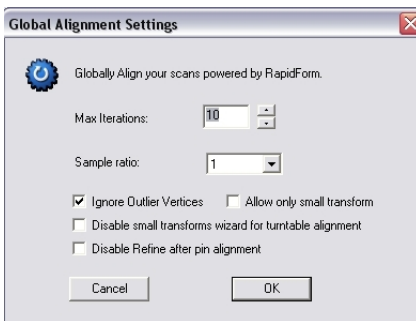


- Click File > Save after each alignment in order to save pin locations
- You can detach a scan by dragging it from the green to the blue and then you can adjust the pin.

Next Step: Once it's all put together, learn how to trim and fuse your scan data ->

Align Settings

Advanced Settings



Max Iterations

- Input a value which limits the number of iterations run by the refine alignment algorithm.

Sample Ratio

- 1/1, 1/4, 1/9, 1/16, 1/25, 1/36, 1/49 and 1/64.
- If you are dealing with a large data set, you may sample it. Doing this, the registration result won't be sacrificed, but the processing time greatly decreases.

Ignore Outlier Vertices

- If checked, data which is far from the average will be ignored during calculation.

Allow only small transform

- The entire overlapped region is considered while assuming that the initial alignment is already well done.
- It is recommended to check this option if there are few geometric features in the overlapped region.

Disable small transforms wizard for turntable alignment

- By default the small transforms wizard is on.
- The wizard automatically detects when the small transforms method should be used to improve alignment results.
- It can be disabled here if it is not helping alignment results.

Disable Refine after pin alignment

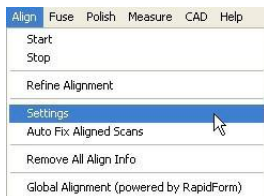
- By default the alignment is automatically refined after the initially pin alignment.
- If the refine alignment is not improving the alignment results it can be disabled here.

Fixing Scans

When aligning multiple families it may be beneficial to lock the individual families in place so that any future alignment does not disrupt the already aligned families.

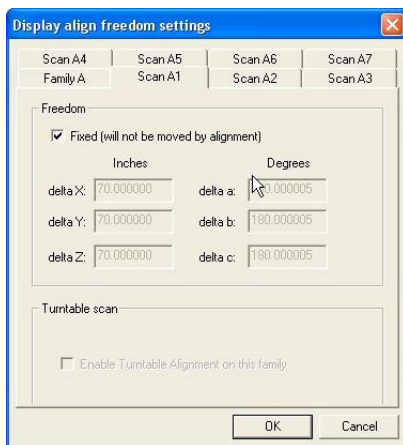
Fixing a Single Family

-After your single family alignment is complete (double click on the family if you need to expand it out), then go to Align, Settings.



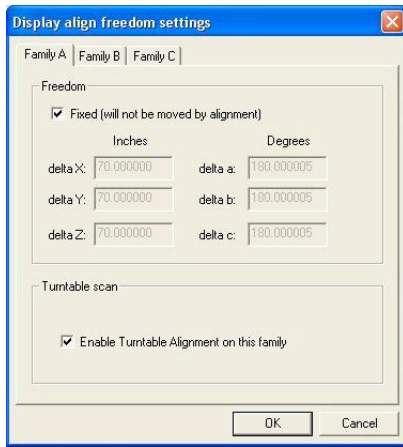
-Check the box "Fixed (will not be moved by alignment)" for scans A1-An. This will lock the individual scans in the family and not be moved with future alignment.

-If you check the Fixed button for the Family A tab, then this will lock the entire family in place and not just the individual scans for that family.



Fixing Multiple Families

-For multiple families, go to Align, Settings and check the box "Fixed (will not be moved by alignment)" for the families that have been successfully aligned and wish to be locked in place.



Example:

- Starting out with three families (One 360 and two brackets)
- Attach Family A to Family B (both families are not fixed)
- Go to Align, Settings and check "Fixed" for Family A and Family B (They are now locked in position)
- Proceed to attach Family C to A and B.
- After C is successfully aligned, then go to Align, Settings and fix Family C
- Repeat for any additional family attached.

3.5 Trim

Intro

- Back up your scan file as a different copy unless ScanStudio has not done so already.

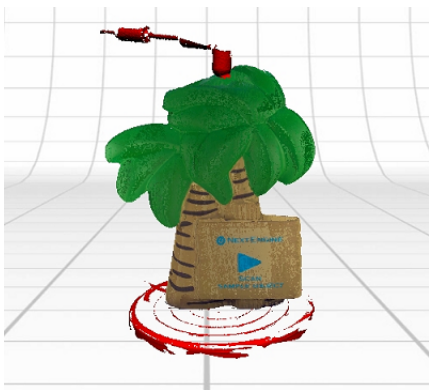


Click the 'Trim' button in the

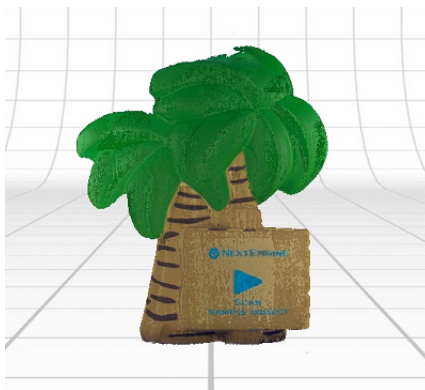
- Click the circle/square/square selector/poly selector button in the toolbar to select data



- Select the area on the scan to be removed and continue selecting until all unwanted area is highlighted
- To remove selected area, click on the "Trim" button in the toolbar
- Continue the process until all unwanted area has been removed



Before Trim



After Trim

Deselecting

- If an area is incorrectly selected it can be deselected before trimming takes place.
- To deselect an area, click on the "minus sign" in the toolbar, which will turn the selectors to blue



- Then click on the area to be deselected.
- Click on the "plus sign" in the toolbar to return the circle/square to red and resume selecting area to be removed

- Select "undo" under Edit in the toolbar to undo the last trim. (This will only work if you have Enabled Model Backups)
- You can also restore trimmed data through Regeneration of your scan found here: ->

Navigating

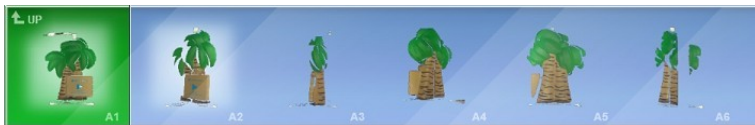
- Click on the "pointer button" before zooming or repositioning the object



- Drag object up/down while right clicking to zoom.
- Drag the object while holding down both mouse buttons to pan ->.
- Hold down center scroll to rotate object without selecting any areas.

When to Trim

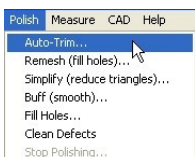
- You can trim completed individual scans of 360/bracket scans while other scans are finishing.
- Before alignment you should not trim away parts of the object, only parts of the PartGripper.
- After alignment you can trim overlapping data to improve fusing/merging.
- Double click on the aligned family and drag the scan to be trimmed into the blue thumbnail bar



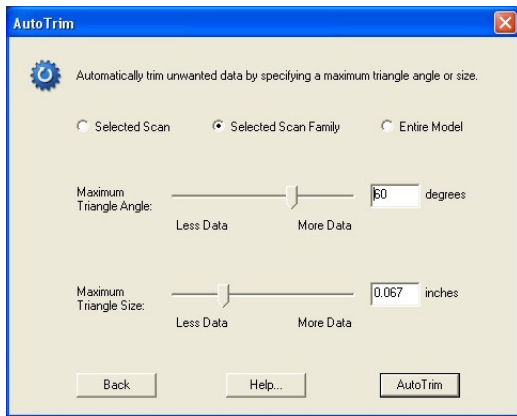
Next Step: Fuse your scans to remove any remaining overlap -> or align your scans if needed ->

AutoTrim

- Auto-trimming automatically detects and removes data that was captured at a steep angle relative to the line of sight of the scanner.
- This can be useful in removing data that may negatively affect alignment or blending.
- Auto-trimming is available under the Polish menu and should be run before aligning, fusing or merging multiple scans together.



- With this option selected you can choose the angle for trimming.



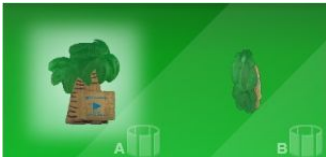
If you have any further questions, please click on the Ask? button.

3.6 Fuse

Fuse

The Fuse tool Volume Merges, Remeshes, Fills Holes and Simplifies your aligned scan data.

- Ensure that the data that you would like to fuse is aligned in the green section of the bottom view bar.



Click Fuse

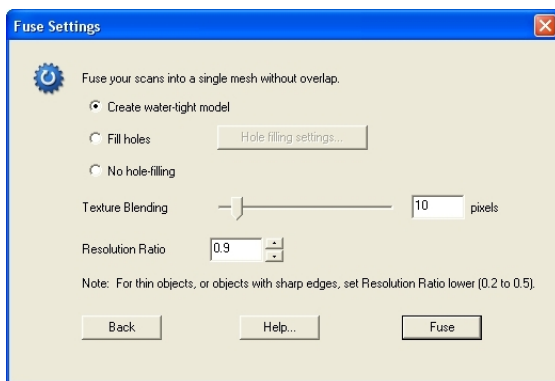


Choose Simplification Level

- Enter the desired deviation tolerance for any mesh simplification (decimation)
- 0.00" simplification will not simplify the data
- Increasing the simplification will simplify your model and make the file size smaller.
- It will perform intelligent simplification, which keeps more points in detailed areas and fewer points in larger planes.



Click to enter Settings

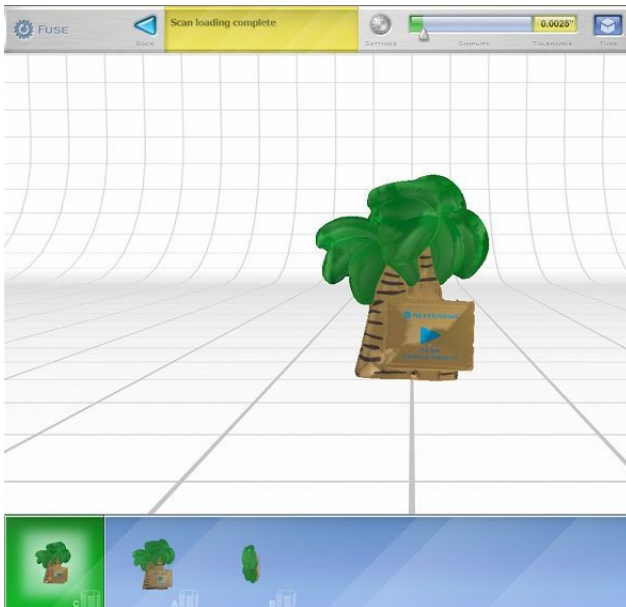


- The Hole Filling Slider controls the max. circumference size of holes to fill.
- Control how much blending of the textures to perform (to account for brightness variations):
- Resolution Ratio determines the new average vertice length in relationship to the current length.

- Values less than 1 will decrease your triangle size. Values greater than 1 will increase your triangle size.
- **It is best to keep this at the default of 0.9.**



Click FUSE



New family C is created

Volume Merge

The Volume Merge tool eliminates the overlap from multiple scans and merges them into a single mesh.

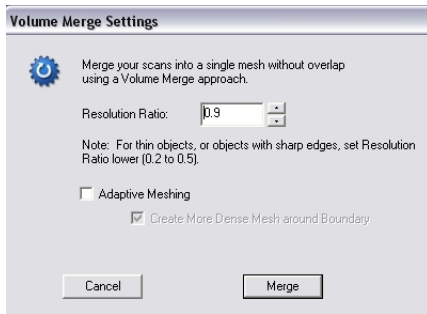
Volume Merge can be used in place of Fuse if you do not wish to Remesh or Hole Fill your scans.

To Merge multiple scans into a single mesh:

- Ensure that the scans to merge are in the green section of the bottom view bar.



Select Volume Merge



Resolution Ratio

- Controls the size and amount of triangles that will be in the merged result.
- **It is best to keep it at the default of 0.9.**
- Values from 0-1 will result in smaller triangles than those presently in the scan.
- Values larger than 1 will result in larger triangles with a possible loss of detail.

Adaptive Meshing

- Adaptive Meshing will intelligently reduced the point cloud of the final merged model.



New family C is created

The Merge process will not automatically fill holes in the mesh where there is no scan data. You can use the Remesh option after a Merge to create a water-tight mesh (more info: ->).

Fusing Large Models

- The number of points that can be merged or fused at one time is dependant on the Computer Specs.
- To fuse/merge larger models we recommend these specs:

CPU:

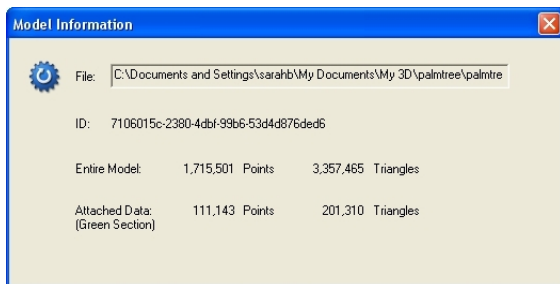
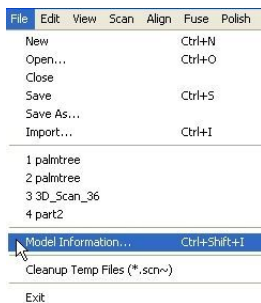
Dual Core, Quad Core or i7 processor

Memory:
4+ GB RAM

Graphics Card:
512+ MB GPU (Dedicated, non-integrated)

Operating System:
Windows XP 64 Bit
Windows Vista 64 Bit
Windows 7 64 Bit

You can check the number of points in your model under File->Model Information.



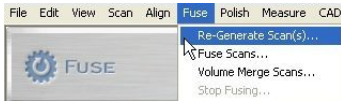
To reduce the number of points in your model Regenerate your data a higher simplification level. See next section for instructions for regenerating.

Regenerate

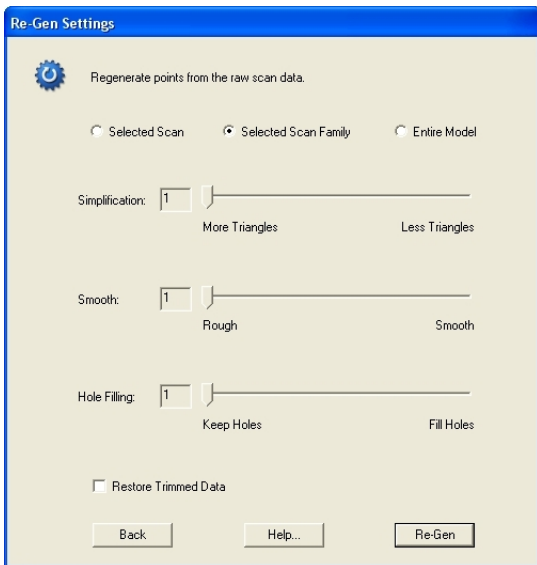
Since the raw scan data is saved at scan-time, you can regenerate the points at any time with different point-generation settings. These settings have the same effect as the sliders on the scan setup screen.

Re-Gen is particularly useful for changing the simplification value after a scan has been completed.

Steps:



Click Fuse, Re-Generate



Select new settings for reprocessing

- Higher Simplification values will result in fewer points in the model.
- Simplification level of 2 will result in 1/4 of the original data, level 3 will result in 1/9 of original data...
- Simplification can be increased and decreased at any time without losing original data.
- Restore Trimmed Data: Choose this option to restore the trimmed data from either a single scan, family or the entire model.

Texture Quality

Texture Blending

- Prior to fusing there is overlap between scans.
- When you fuse a model the best 3D data for each point is kept and the rest is removed to create a single mesh.
- There may be varying shadows on the final fused result depending on which 3D data and associated texture remains post fuse.

Tips to improve textures:

- Ambient lighting- Minimizing the ambient lighting in the room can help improve textures.
- Object Distance- If you are repositioning the object make sure to keep the same approximate distance to reduce color variation.
- Shadows- Try to minimize shadows as much as possible. Keep in mind the PartGripper can cause

shadows. Prior to scanning you can preview the rotation using the STEP and TURN buttons in the scan panel. If necessary you can adjust the position of the rotations to reduce shadows. If you have a single scan with an extreme shadow you can try to trim out the shadow as long as the data was capture from a different angle.

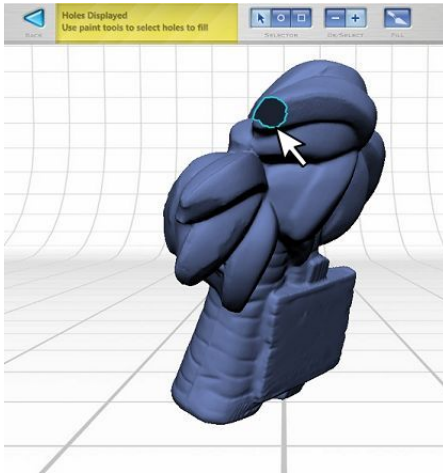
3.7 Polish

Hole Fill

- Enter the Polish panel.



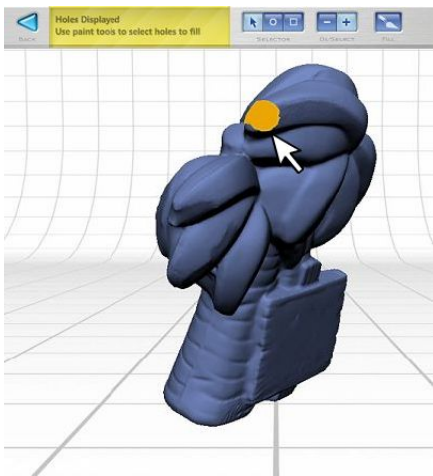
- Select the Fill tool.



Holes are automatically detected

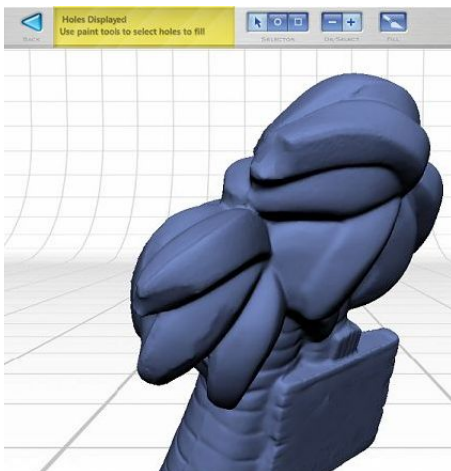
Note: Please make sure that when using the Fill tool, you are working with a fused, merged or a single scan model.

- Use the selector tools to select the holes that you would like to fill.



Selected holes will turn orange

- When you finish your selection(s), select the Fill button to permanently commit these triangles into your model.



After Fill

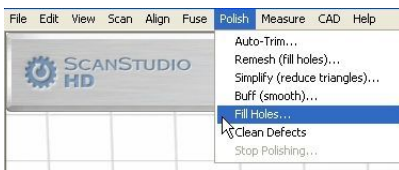
Auto Hole Fill

To have ScanStudio automatically fill holes in the scan data:

- Ensure that the data that you would like to fill holes on is a volume merged model in the green section of the bottom view bar.



- Select the Fill Holes tool from the Advanced Polish Menu.



- Enter desired Hole Filling Settings.



a. FILL METHOD:

- Flat Fill will fill the holes along a flat edge.
- Smooth Fill will fill the holes along a smooth edge.
- Curvature Fill will analyze the neighboring geometry and try to match the overall curvature.

b. MAX VERTICES: Controls the maximum number of vertices for holes to fill. Increase to fill more holes.

c. LEAVE LARGEST: Enable this option to leave the largest hole in the scans.

d. SMOOTH BOUNDARIES: Enable this option to smooth the vertices on the edge of the holes as part of the fill process.

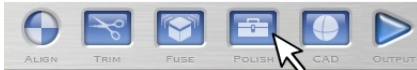
You can also use the Remesh tool to automatically fill holes in merged data: ->

You can alternatively use the ScanStudio manual hole filling tool to manually select and fill holes (more info: ->).

If you have any further questions, please click on the Ask? button.

Buff

- Click on the Polish tool.

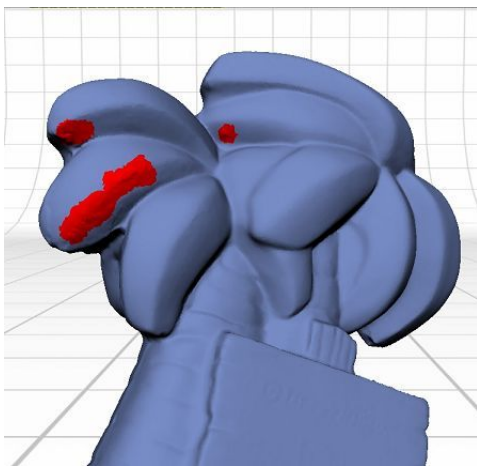


- Then click on the Buff tool.



Note: When buffing, please make sure that the model is a fused or merged model.

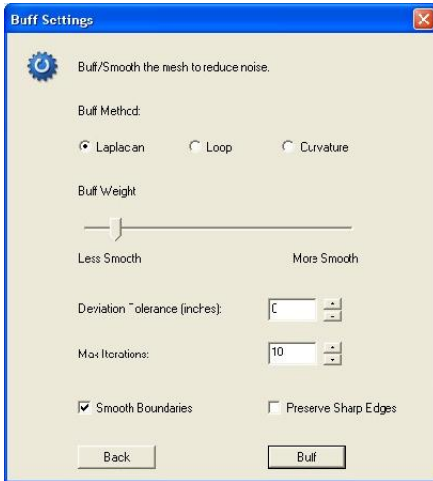
- Select localized data to smooth or all for the entire mesh.



Selected data will be highlighted red

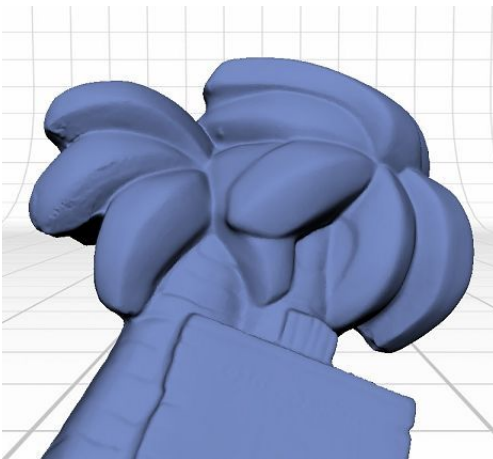
Settings

3. Enter the desired buff options:

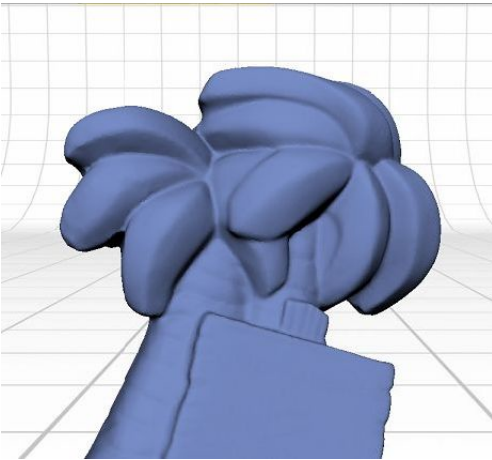


- a. Buff Method: Laplacian and Loop are two different smoothing methods. The Curvature option can be used for curvature based smoothing.
- b. Buff Weight: Increase to run a higher level of smoothing (when the Loop method is used, the number of iterations is all that needs to be specified, the smoothing weight has no impact).
- c. Deviation Tolerance: Optionally enter the allowable deviation for the smoothing.
- d. Max Iterations: Increase to run more iterations of smoothing and therefore reduce more noise.
- e. Smooth Boundaries: Enable this option to smooth vertices around the edges of holes.
- f. Preserve Sharp Edges Enable this option to try and retain sharp edge detail.

Results



Before



After

If you have any further questions, please click on the Ask? button.

Simplify

Note: When using the Simplify tool, please make sure that you are working on a fused or merged model. Simplifying prior to fusing/merging will create non-uniform mesh. Please regenerate scans if you need to decrease model size before fusing (more info ->).

- Click on the Polish tool.

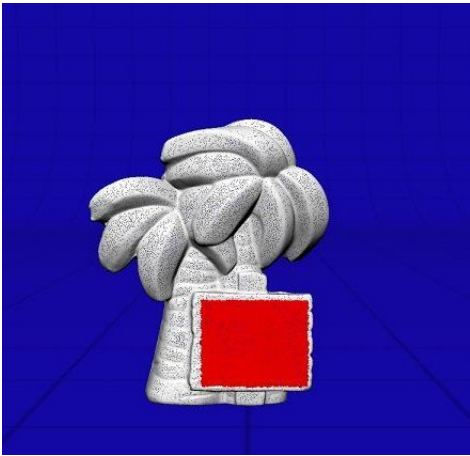


- Click on the Simplify tool.



- Select the local data to simplify or select all.

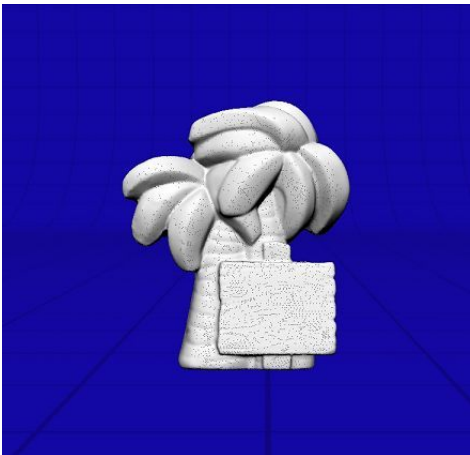




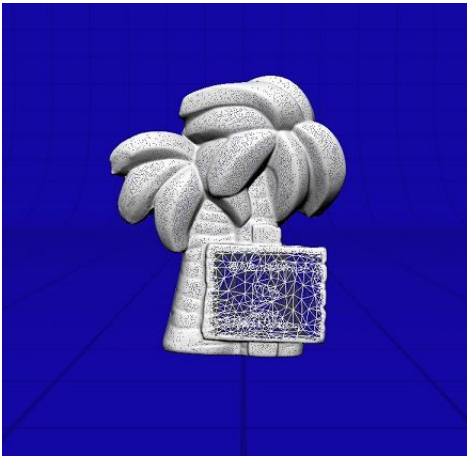
- Choose the desired simplification tolerance from the top menu bar slider.



- Click the SIMPLIFY button.



Before Simplify



After Simplify

If you have further questions on the simplify tool, please click on the Ask? button.

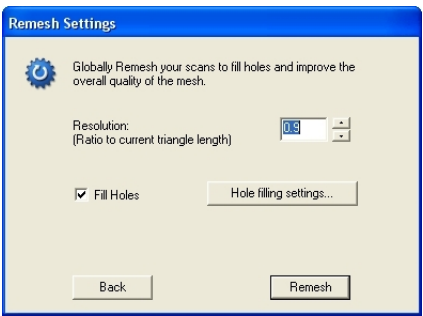
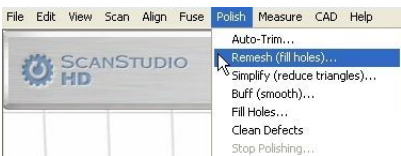
Remesh

- Ensure that merged or fused model is in the green section of the bottom view bar



Note: It is advised to remesh scans that have been merged/fused. For more info: ->.

- Select the Remesh tool from the Advanced Polish Menu.

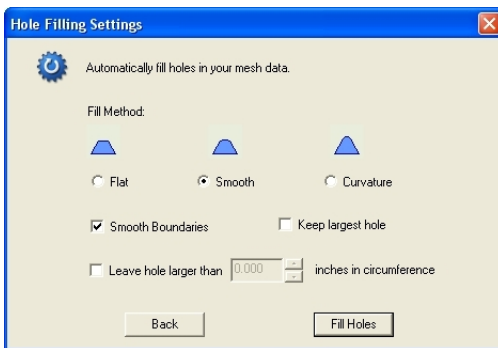


Choose Remesh Settings

Resolution: Controls the size and amount of triangles that will be in the remeshed result.

Values from 0-1 will result in smaller triangles than those presently in the scan.
Values larger than 1 will result in larger triangles with a possible loss of detail.

Fill Holes: Select the Hole Filling Settings to fill some or all holes.



Fill Method: You can experiment with the different fill methods to see which works best for your model and the sizes and shapes of the holes.

Smooth Boundaries: Select this option to smooth the boundary of the newly filled holes.

Keep Largest Hole: If your object has an opening that is part of the design select this option to keep that hole from filling.

Keep Holes Larger Than: If you don't want to fill all holes, then you can manually set which holes of circumference size to fill.

The Remesh tool can be very useful when run after Merging Scans to create a water-tight mesh.

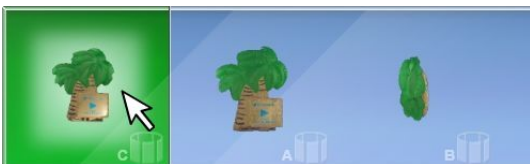
If you have any further questions, please click on the Ask? button.

Clean Defects

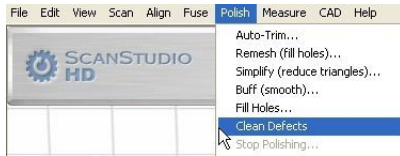
Clean Defects should be run at the end of your polishing process and can be used to automatically eliminate any self intersecting or non-manifold triangles.

To Clean Defects in your mesh:

1. Ensure that your Merged and Remeshed model or fused model is in the green section of the bottom view bar.



2. Select "Clean Defects" from the Polish - Advanced menu.



Any defects in the mesh will be automatically detected and cleaned.

If you have any further questions, please click on the Ask? button.

3.8 Orient

The **Orient Tool** can be used to define an origin and Orient your scan data in a defined global coordinate space.

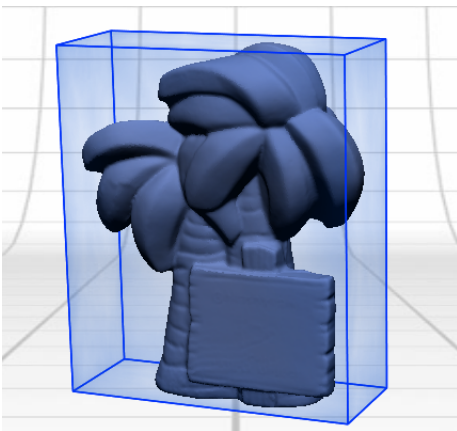
- Click on the CAD button from the top toolbar to enter the CAD toolbar:



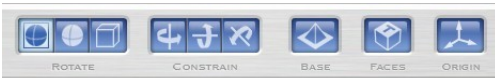
- Select Orient to enter the Orient toolbar:



- ScanStudio will show a bounding box representation of the common view planes (top, left, front, etc.):



Settings



Rotate

- First option to rotate both bounding box with model
- Second option is to rotate the model with a fixed bounding box
- Third option is to rotate the bounding box with a fixed model

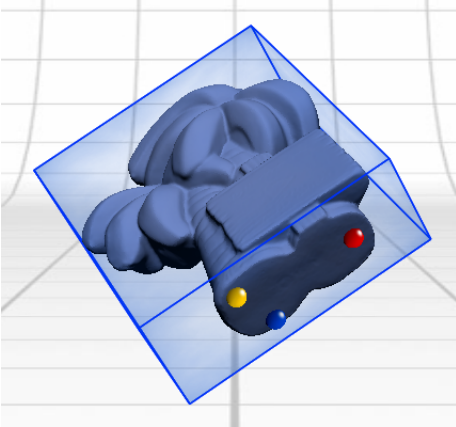
Constrain

- Use the constrain buttons to limit rotations on the x, y or z axis

Base

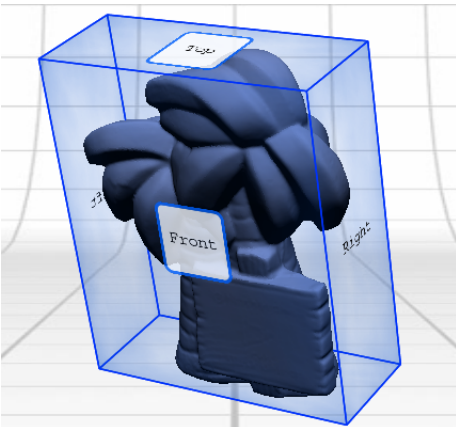
- Click the base button and place 3 pins on the object to define one of the common view planes of the

bounding box:



Faces

- Click on faces to view the front, back, left, right, top and bottom locations



Origin

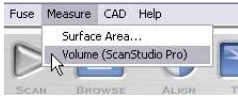
- Click on the origin button and place 1 pin on the mesh to define the origin.

Notes: Mesh scan data can be globally oriented, but CAD data cannot.

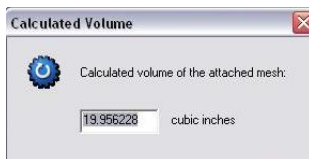
3.9 Measure

Volume Measurement

- Ensure that your fused or merged and remeshed data is in the green section of the bottom view bar.
- Select Volume from the Measure menu:



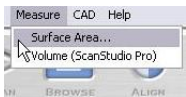
- The calculated volume will be displayed:



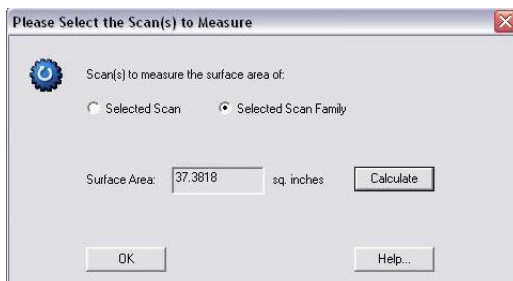
- This tool is only available with the ScanStudio CadTools upgrade.

Surface Area Measurement

- Ensure that your fused or merged and remeshed data is in the green section of the bottom view bar.
- Select Surface Area from the Measure menu:



- The calculated surface area will be displayed:



Point to Point Measurement

- To measure a distance on a scan you can click on one point then press the letter "i" on your keyboard.
- This will give you the coordinates of that point.
- Then do the same at your second point and it will give you the new coordinates along with the

distance to the previous point.

Point Information

Local Coordinate

X

0.276133

Y

-3.259965

Z

0.300969

Absolute Coordinate

X

0.400481

Y

-3.263185

Z

1.273699

Distance from Previous Point: 1.659847

Texture

U

353

V

283

Info

Triangle Index

11879

Vertex Index

8273

Scan ID

D1

3.10 Output

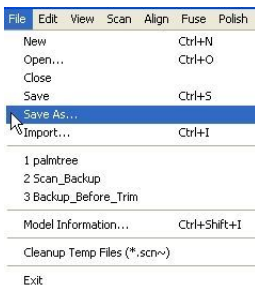
- Click the OUTPUT button to output the scan model.



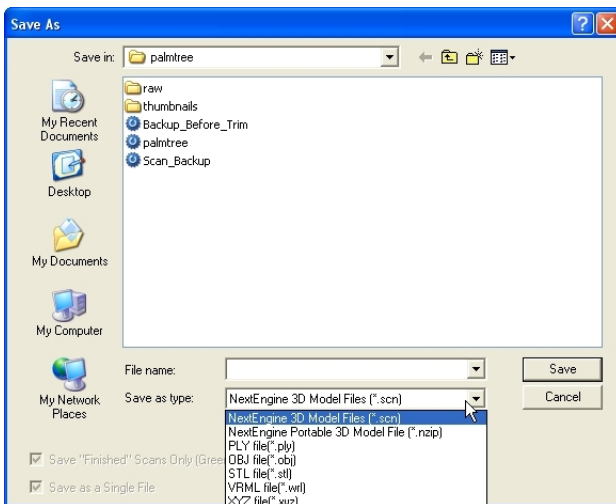
-Choose the type of file you want to output



You can also export through the File-> Save As option.



Mesh Files



- ScanStudio HD allows the export of PLY, U3D, OBJ, XYZ, STL and VRML files.

NZIP Files

- An NZIP file is a compressed ScanStudio file that contains the SCN file and associated JPEGs
- It is useful if you need to transfer a scan file to a different computer.

3D Print

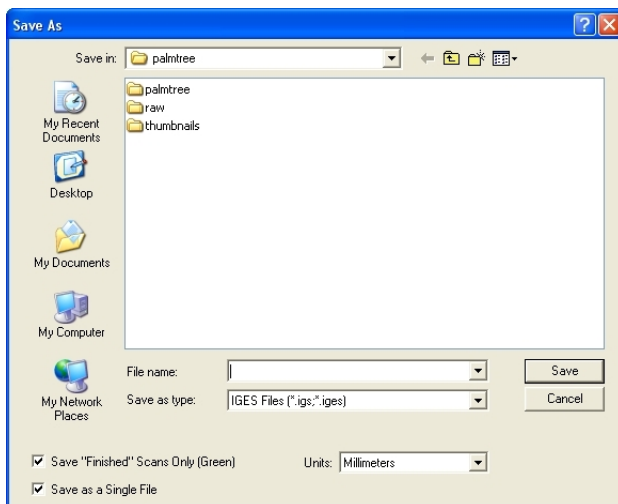
Currently in development.

IGES and STEP Files

- Exporting IGES and STEP files is only available with ScanStudio CadTools.
- For more information about upgrading to CadTools please contact info@nextengine.com.
- Mesh data cannot be exported as an IGES/STEP file.
- Insure the model contains either splines or autosurfaces in the green section of the toolbar (for more info click here ->).



Select



Name your scan, choose the output units, click

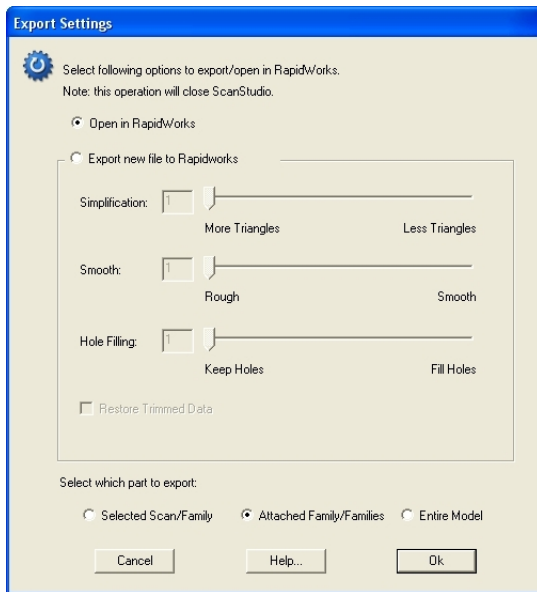
Rapidworks

- Directly transfer a fused or unfused model from ScanStudio to Rapidworks.
- Surfaces and Splines cannot be transferred.



Select Rapidworks

- Output your currently loaded model as is.



- If you are exporting unfused scans, you have the option of Regenerating the scan data during the export process.
- Choose to output the Selected Scan Family, Attached Data (in the green) or the Entire Model.

Solidworks

- Fused or merged scans can be directly transferred to Solidworks Office Premium.
- To enable the transfer the ScanTo3D add-in must be loaded in Solidworks.
- To load the add-in go to Tools-> Add-ins in Solidworks.

U3D

- Due to our shift to a 64 bit platform we no longer support the U3D file format.
- ScanStudio 1.1.1 is still available for download and it does have the option to export U3D files.
- Download it at this link: ->
- If Adobe updates the U3D file format we will reimplement it in future ScanStudio versions.

For more information on using your scan data in Solidworks click here ->.

Chapter 4

ScanStudio HD Add-Ons

4.1 MultiDrive

Setup

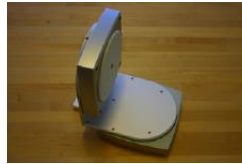
-Here are the items that are included with the MultiDrive:



Allen wrench and



L Bracket



AutoPostioner

-**Attach** the L Bracket to the MultiDrive with two flat head screws and allen wrench



-**Attach** the MultiDrive to the bottom of the scanner and **fasten** a screw underneath the scanner for additional stability

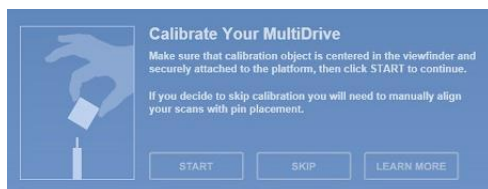


-**Plug** in the MultiDrive to the scanner



-**Start** ScanStudioHD and proceed to Calibration

Calibration



When starting your first scan in

-**"Start"** to begin the automated calibration process (We suggesting using the palm tree included with the MultiDrive)

-**"Skip"** if you wish to proceed to the scan panel and choose

-**"Learn More"** to be directed to this help page.



You can

-This function is available for re-calibration when alignment results in an error or when the MultiDrive was detached and is reattached.

Scan Process



After calibration is

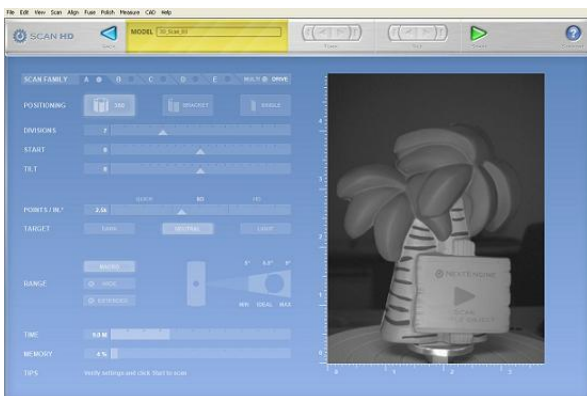


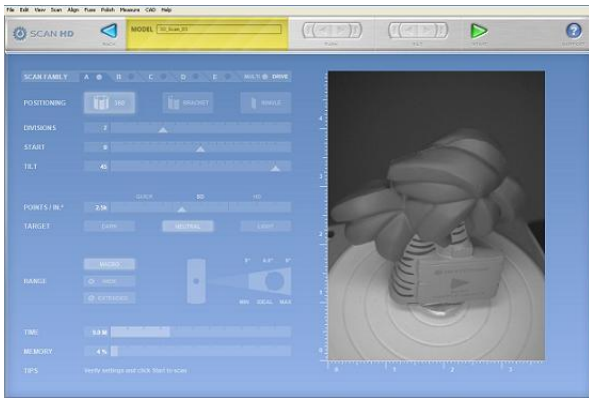
A new scan panel will be loaded when

- Five families are now available for predefined settings for Positioning, Divisions, Start Angle, Tilt Angle, Points/IN² and Target
- Clicking on the family name will enable the tab to edit the settings.
- To enable or disable a family, simply check or uncheck the circle next to the family name.
- Starting positions can be set for both the initial and tilt axis by moving the slider bar arrow.
- The start axis has the full 360 rotation and tilt axis is bounded to -35 to 45 degrees.
- Use the top slider bars to visually set the starting and tilt positions. (This will update the settings for the scan family)



- Select the scan settings for each tab and check the tabs you want to have scan.
- If the setting for a tab have been adjusted, but the tab is not checked it will not scan.





- All MultiDrive scans are to be in MACRO mode.
- Select a ROI for your model to prevent the MultiDrive from being scanned in for certain tilt angles.
- If additional scans are needed, enter scan panel and position the model by using different starting and tilt angles to capture additional scans.
- If you physically adjust the part, then a 3 pin alignment will be needed to align.
- When finished, trim unnecessary data and "Fuse" or "Volume Merge" the model for export: ->

Troubleshooting

Warning

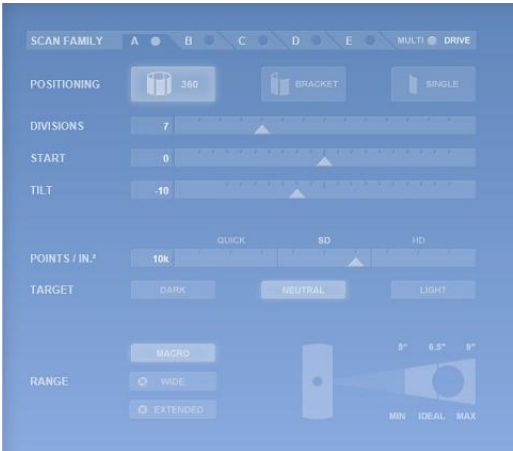
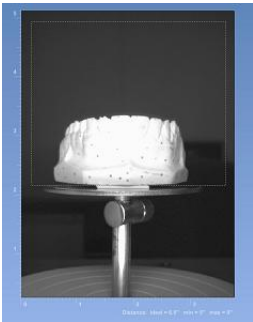
- Do not use the AutoDrive PartGripper with the MultiDrive as the length of the pole will cause it to hit the scanner when the MultiDrive is positioned at certain angles.

Switching between AutoDrive and MultiDrive

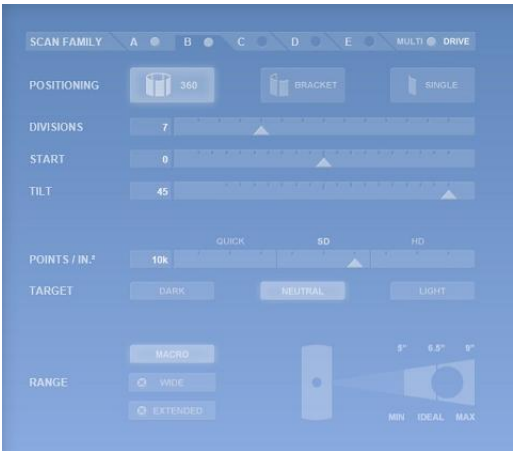
- Simply plug in an AutoDrive to display the proper UI.
- When reattaching the MultiDrive, make sure to recalibrate as needed.
- When more than 5 Scan families are required, then just click on scan to enter the scan panel, and you can add 5 more new sessions. These scans should auto align to the previous scans assuming all the movement and rotations were done by the turntable. If they don't auto-align , just drag the scans into the green and refine (no pins required)
- Force Calibration. If your scans are not coming in aligned, you may need to run a force calibration. You can do this from the drop down menu , Align, then go down to Calibrate MultiDrive

Dental

Recommended Scan Settings for Dental Cast Models



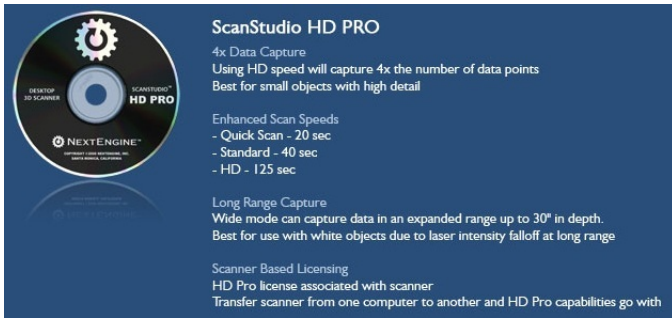
Family A Divisions: 6 Tilt: -10



Family B Divisions: 6 Tilt: 45 degrees

-Use the HD speed for higher resolution

4.2 HD PRO



SCANSTUDIO HD PRO

4x Data Capture

HD scan speed allows for a maximum point cloud resolution of .0025", thereby capable of capturing finer details and smaller objects.

Extended Wide Mode Scanning

In the scan panel select Extended mode to increase the depth range to 30 inches from the scanner. The maximum field of view in Extended mode is 16 x 20". There will be a degradation in the accuracy of the scan results at these distances, it is suggested that you scan white objects for best results.

Faster Laser Scan Time

With HD PRO activated the laser scan time is nearly twice as fast.

Activating HD PRO

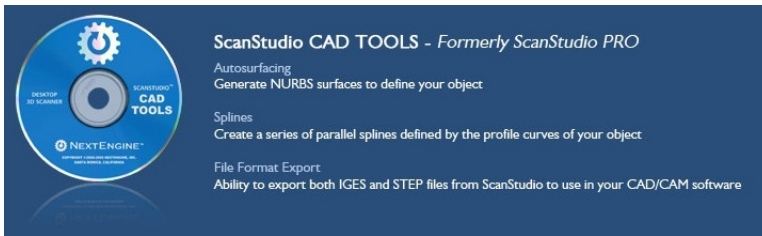
To activate HD PRO click on Help>My Software and activate on the My Software page.

To purchase the HD PRO license visit the buy page here.

This software requires an HD capable scanner. For more information click the ASK button below.

4.3 CAD Tools

Intro



SCANSTUDIO CAD TOOLS

Auto Surfacing

1 - Button creation of NURBS surfaces. CAD TOOLS creates a patch network of surfaces on your mesh models for easy IGES and STEP export.

Spline Creation

Defined spacial splines can be created with ease. Simple curves are traced from your mesh models and are great for referencing size and shape.

File Export

Easy output of Splines and Surfaces as IGES or STEP.

Activating CAD TOOLS

To activate CAD TOOLS click on Help>My Software and activate on the My Software page.

To purchase the CAD TOOLS license visit the buy page here.

For more information click the ASK button below.

Spline

The **Spline Tool** can be used to extract boundary curves from your mesh data.

- Ensure that the **Fused** mesh data that you wish to convert to splines is in the green section of the bottom view bar.



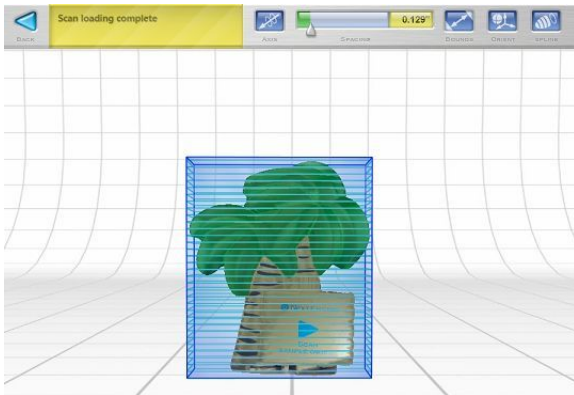


Select CAD

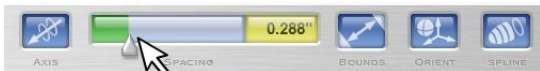


Select SPLINE

- ScanStudio will automatically calculate and display a bounding box which can be used to define the plane cuts to use to extract the boundary splines:



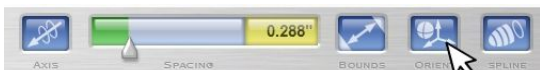
AXIS button to change which face from



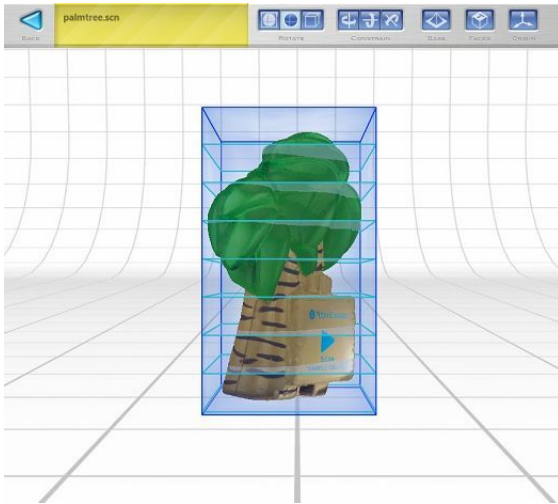
SPACING slider to control how far apart



The BOUNDS tool to control which



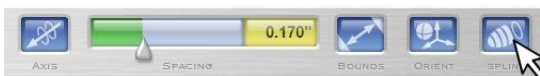
ORIENT tool to position the mesh data



Use the Rotate tools to move either the mesh data, the bounding box, or both.

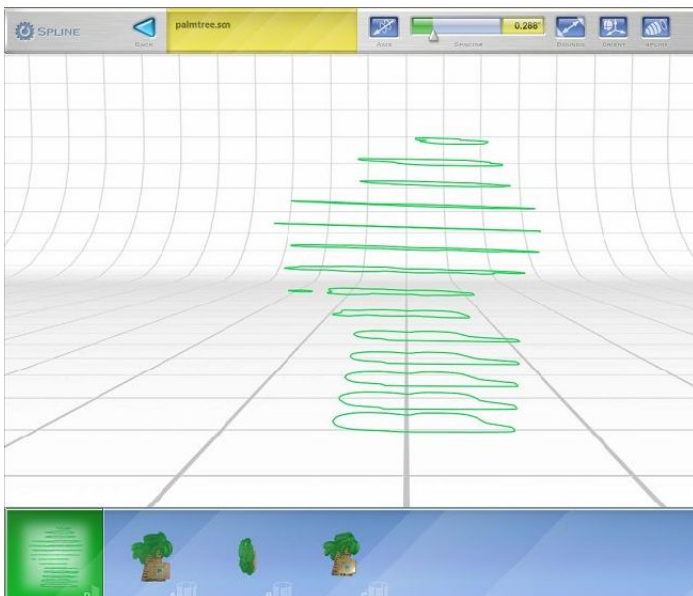
The Constrain tools can be used to limit rotation along a particular axis.

The Base tool can be used to define one of the planes in the bounding box by placing pins on the mesh



Click SPLINE to complete

The set of splines created will be added to a common "Spline" family off of the root of the model.



AutoSurface

The **AutoSurface Tool** will automatically create a patch network of surfaces from the mesh model. This can be easily exported as an IGES or STEP file.

- Ensure that you have merged results in the green section of the bottom view bar:



Select CAD



Select



Choose the Number of

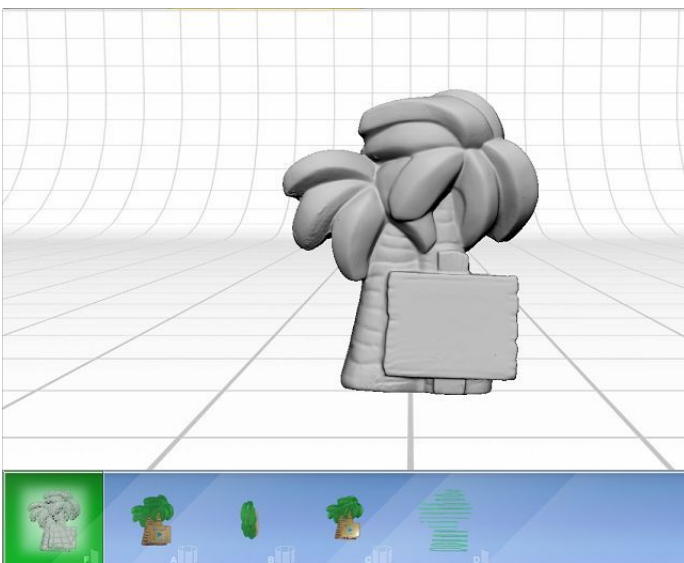
More surfaces may result in more accuracy.

If the resulting surfaces have missing data then try increasing the number of surfaces.



Click SURFACE

-The resulting surfaces are stored in the SCN file and displayed



Output

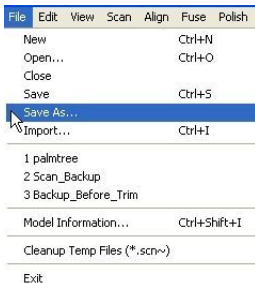
- Exporting IGES and STEP files is only available with **ScanStudio CAD TOOLS**.
- For more information about upgrading to CadTools please contact info@nextengine.com.
- Mesh data cannot be exported as an IGES/STEP file.
- Insure the model contains either splines or autosurfaces in the green section of the toolbar



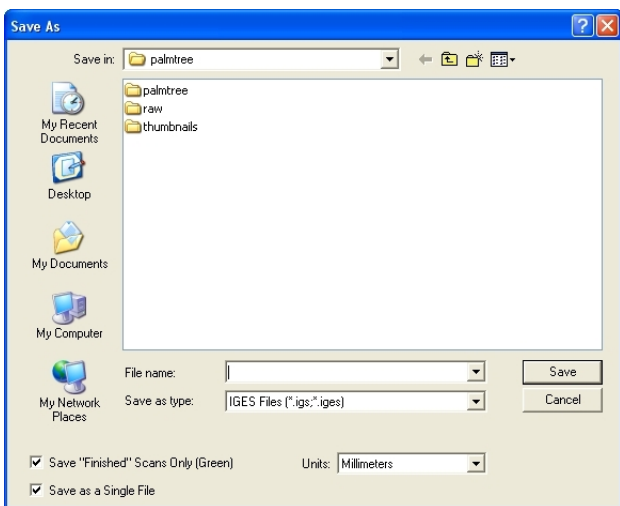
Select Output



Select



Alternate Export



Name your scan, choose the output units, click

4.4 ProCare



ScanStudio HD ProCare

- Extended 3 years of Online Support through the NextWiki Support Center with access to Technical Support and Online Documentation.
- Standard Technical Support terms end after 1 year, Online Documentation will remain available for reference.
- Live online chat with expert Applications Engineers who can help with troubleshooting, scanning tips and custom workflow documents for your individual application.

ScanStudio HD ProCare Pricing

\$295 - ScanStudio HD ProCare must be purchased within 90 days of original Scanner purchase.

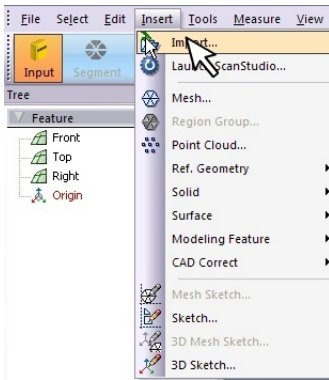
**To purchase the ScanStudio HD ProCare visit the [buy page here](#).
For more information click the ASK button below.**

Chapter 5

Rapidworks

5.1 Importing Scans

IMPORTING SCANS TO RAPIDWORKS



Select INSERT and

Under Construction...

5.2 Mesh Modeling

MESH BUILDUP WIZARD

Coming Soon

5.3 Surface Modeling

AUTO SURFACING IN RAPIDWORKS

Coming Soon

5.4 ProCare



Rapidworks ProCare

- 3 years of Major and Minor Updates to RapidWorks
- Access to the Rapidworks Success site with over 18 hours of full-screen HD video tutorials and sample files made by expert Rapidworks users.
- Access to the support engineers at Rapidform for more personalized help with models.

Without Rapidworks ProCare

- If ProCare is not purchased users will not be updated on Major or Minor Releases.
- Updates will only include bug fix releases such as 2.3.x to 2.3.xx.
- Users have 90 days to purchase Rapidworks ProCare at the \$995 price, after that it is pro-rated.
- Online help through the NextWiki and the included PDF User Manual only.
- Engineers cannot work on specific models and upload it for users.
- No phone support

RapidWorks ProCare Pricing

- Within 90 days of RapidWorks purchase = \$995
- 90 days - 6 months = \$1295
- 6 months - 1 year = \$1500
- 1 year - 2 years = \$1750
- 2 years - 3 years = \$2000
- After 3 years = \$2495

Rapidworks ProCare can be purchased at www.nextengine.com/buy

Upon purchasing ProCare, e-mail support@rapidworks3d.com or call (408) 856-6200 x2 to sign up for the Rapidworks Success website.

5.5 Solid Modeling

Chapter 6

Other 3D Programs

6.1 SolidWorks



<http://www.solidworks.com/>

-Solidworks Premium (and Educational version)

The Scanto3D Add-In allows you to import and reference mesh scan data in your 3D design.

-Other Solidworks Versions (Standard/Professional)

If you do not have the Premium version and the Scanto3D Add-In you can use ScanStudio CAD TOOLS -> to create surfaces or splines from your scan data, and then export the surfaces or splines as IGES or STEP.

You can also use RapidWorks -> , which allows the user to recreate a Solid Model from the Scan data, then export a fully featured part into SolidWorks native SLDPRT file format.

6.2 RapidForm XO



Rapidform XOR2

Rapidform XOv2

Rapidform XOS

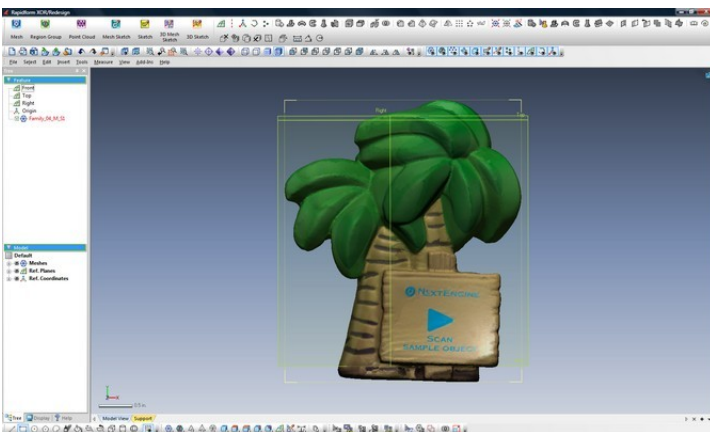
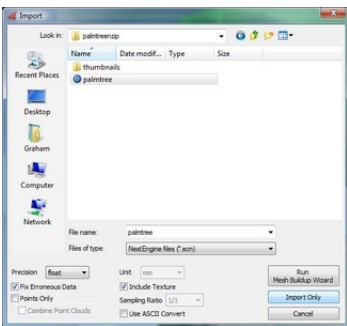
InspectWorks

Rapidform Explorer

<http://www.rapidform.com>

Rapidform XOR2

-Go to **Insert - Import** and under the dropdown for file type select **NextEngine files (*.scn)**:



6.3 Geomagic



<http://www.geomagic.com/en/>

Geomagic Studio

"Transform 3D Scan Data into Accurate Digital Models. Designed to handle the most demanding reverse engineering, product design and rapid prototyping challenges, Geomagic Studio transforms 3D scan data and polygon meshes into accurate 3D digital models. A perfect complement to the CAD, CAE and CAM tools you already own, Studio outputs industry standard formats including STL, IGES, STEP and native CAD files."

6.4 ArtCAM



ArtCAM

<http://www.artcam.com/>

Here is a great new Forum from users combining the NextEngine 3D Scanner and ArtCAM:

<http://forum.artcam.com/viewtopic.php?f=5&t=8143>

6.5 Mesh Lab



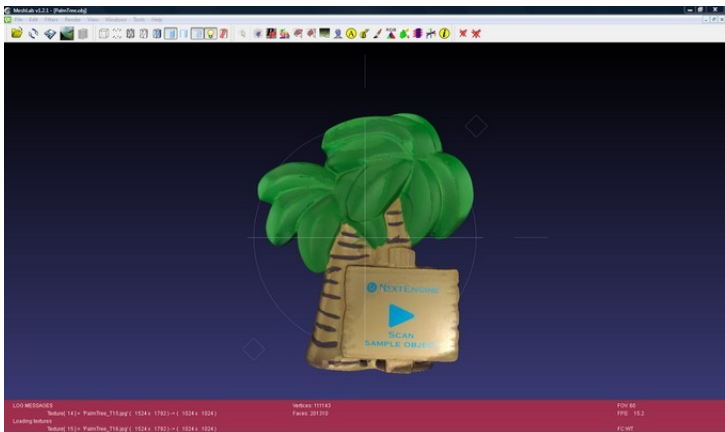
MeshLab

<http://meshlab.sourceforge.net/>

"MeshLab is an open source, portable, and extensible system for the processing and editing of unstructured 3D triangular meshes.

The system is aimed to help the processing of the typical not-so-small unstructured models arising in 3D scanning, providing a set of tools for editing, cleaning, healing, inspecting, rendering and converting this kind of meshes."

Imports all mesh files; STL, OBJ, PLY, XYZ, VRML ->



6.6 Magics



MATERIALIZE MAGICS

<http://www.materialise.com/materialise/view/en/2408555-Magics.html>

- Software for the Rapid Prototyping and Manufacturing Professional.
- Import VRML, STEP and IGES files from ScanStudio HD and ScanStudio CAD Tools into Magics.

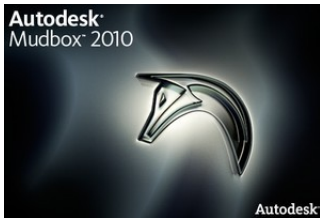
6.7 Maya



AUTODESK MAYA

<http://usa.autodesk.com/adsk/servlet/pc/index?siteID=123112&id=13577897>

6.8 MudBox



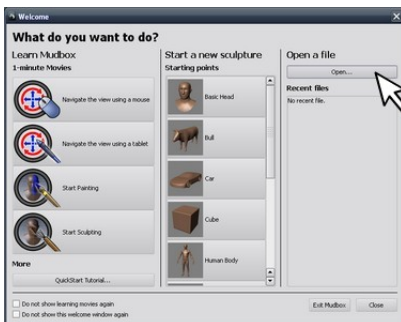
Mudbox

<http://usa.autodesk.com/adsk/servlet/pc/index?siteID=123112&id=13565928>

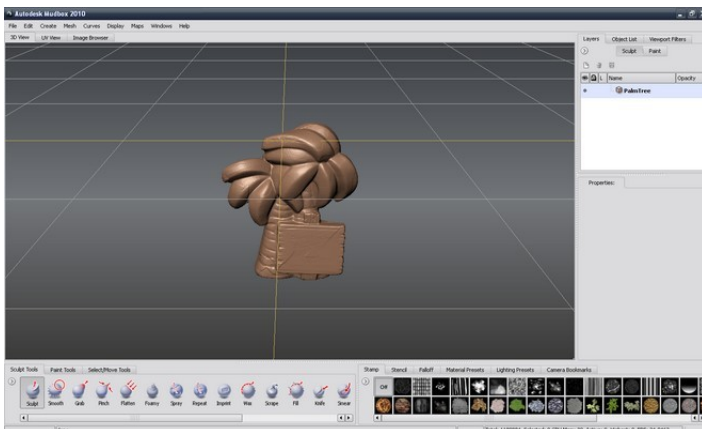
"AutoDesk Mudbox software is an advanced, high-resolution, brush-based digital 3D sculpting and 3D painting solution. Mudbox features and functionality address the needs of professional modelers working in the game, film, television, and design industries."

-You will need to export your model from ScanStudio as an OBJ file. ->

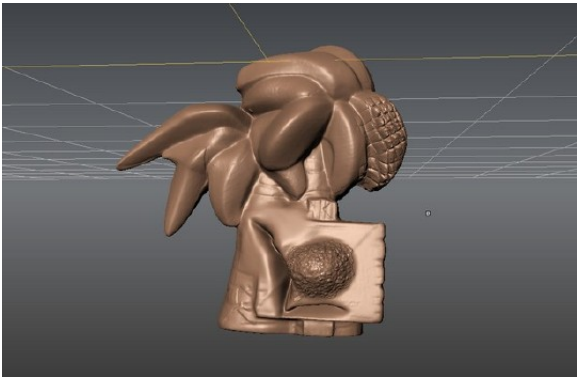
-Select 'Open a File...'



-OBJ File Loaded into Mudbox



-Using the sculpting tools you can quickly redesign your model



6.9 ZBrush



ZBrush

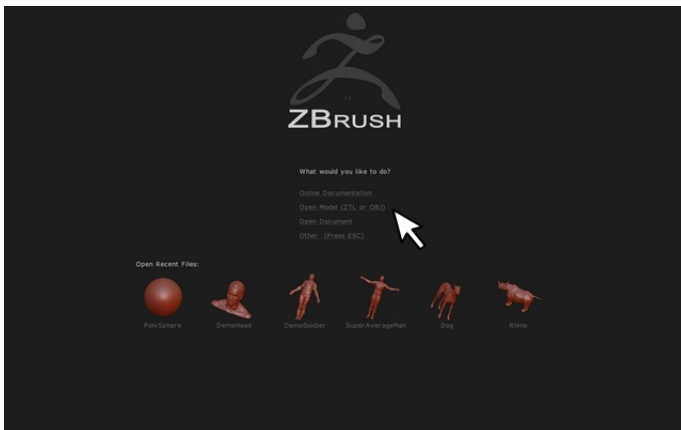
"ZBrush is a digital sculpting and painting program that has revolutionized the 3D industry with its powerful features and intuitive workflows. Built within an elegant interface, ZBrush offers the world's most advanced tools for today's digital artists. With an arsenal of features that have been developed with usability in mind, ZBrush creates a user experience that feels incredibly natural while simultaneously inspiring the artist within. With the ability to sculpt up to a billion polygons, ZBrush allows you to create limited only by your imagination."

Check out the website for full details, gallery, and to download a 30-day trial.
<http://www.pixologic.com/home.php>

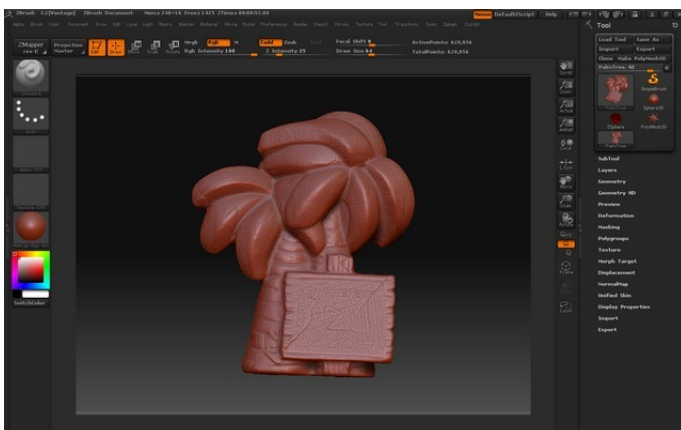
To Load your scan model in ZBrush you will need to export your model as a STL or OBJ file -

>

After opening Software Select **Open Model (STL or OBJ)**



Select the STL/OBJ file from the directory and the model will load in the app:



6.10 Blender



Blender

<http://www.blender.org/>

"Blender is the free open source 3D content creation suite, available for all major operating systems under the GNU General Public License."

Download Blender here:

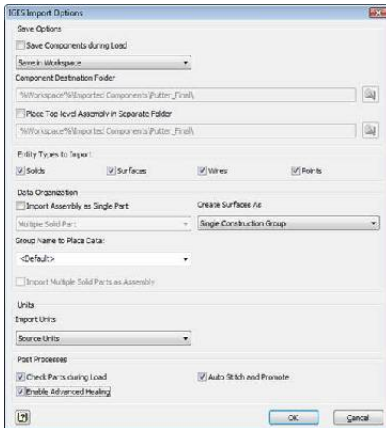
<http://www.blender.org/download/get-blender/>

6.11 AutoDesk

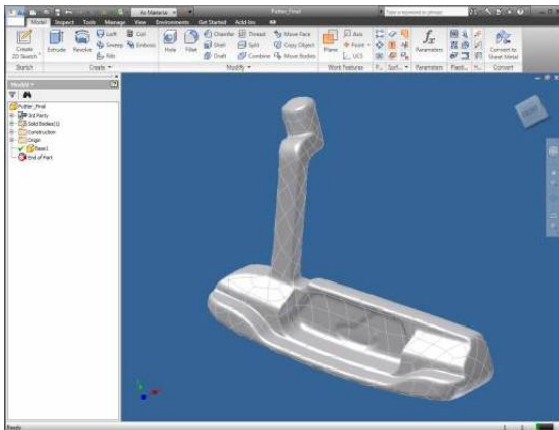
You can now import IGS files by installing Parasolid Plug-In on the Autodesk Labs site.

Here is the link : http://labs.autodesk.com/utilities/translator_add-ins_for_autodesk_/

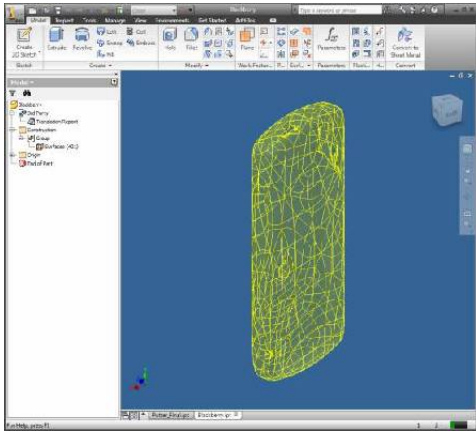
You can access the translator using the standard Open command in Inventor. You can choose various file types to open and in this case I chose IGES as the file type. Once a file is selected you can choose the Options button on the Open dialog. For IGES files you'll get the dialog below.



If it is water tight it will result in a solid as seen below.



If the objects have holes they will import in as surfaces. The result ended up in Inventor's Construction environment with the idea that you can use the tools there to clean up the model and import it into Inventor's parameter environment as either a solid or as a surface. The picture below shows the BlackBerry in the construction environment.



6.12 Rhino



<http://www.rhino3d.com/>

You can open your SCN files directly in Rhino 4.0 by downloading the SCN file importer plugin from:

<http://en.wiki.mcneel.com/default.aspx/McNeel/NextEngine.html>

If you do not have the plug-in installed, or if you are using Rhino 3.0, you will need to export your scans as an OBJ or STL file. ->

Inside ScanStudio:

1. Make sure the model is fused. ->
2. Drag the blended family thumbnail into the green side of the bottom view bar.
3. If you have the SCN importer for Rhino 4.0, simply save your SCN file and then open it in Rhino. If you do not have the SCN importer, then goto File > Save As > and change the file type to OBJ and save an OBJ file.

Inside Rhino:

Please download the following tutorials for information on working with imported meshes in Rhinoceros:

http://www.nextengine.com/Rhino_Scan_Remodel.pdf

<http://download.mcneel.com/download.asp?id=STLRepair>

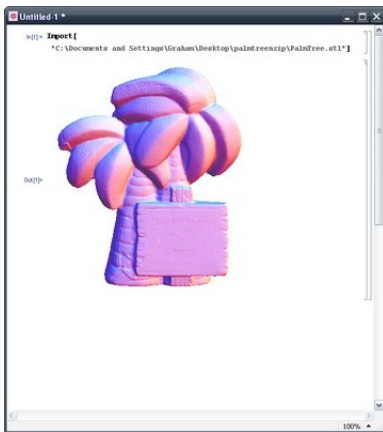
6.13 Mathematica



Mathematica

<http://www.wolfram.com/products/mathematica/index.html>

STL model loaded as 3D Graphic in Mathematica

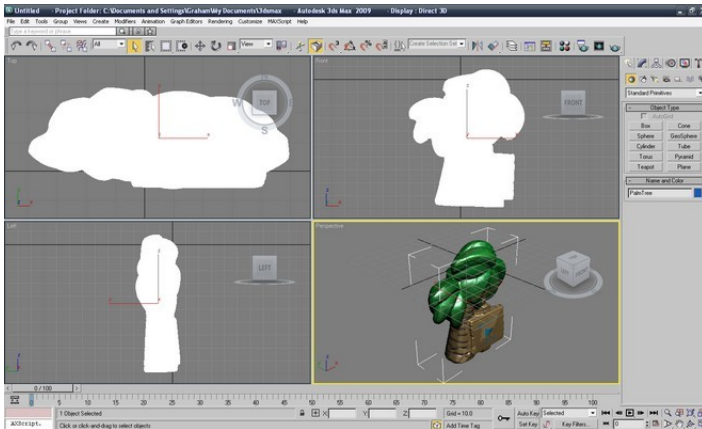


6.14 3D Studio Max



http://www.resources.autodesk.com/med/Autodesk_3ds_Max

OBJ Scan Model Loaded in 3D Studio Max



Chapter 7

Reference

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7.2 Glossary

Glossary of NextEngine Terms
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7.3 Links

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